

# Public Health Assessment for

151579



CORNELL DUBILIER ELECTRONICS INCORPORATED  
SOUTH PLAINFIELD, MIDDLESEX COUNTY, NEW JERSEY

CERCLIS-NO. NJD981557879

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## **THE ATSDR HEALTH ASSESSMENT : A NOTE OF EXPLANATION**

Section 104 (i) (6) (F) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended, states "...the term 'health assessment' shall include preliminary assessments of potential risks to human health posed by individual sites and facilities, based on such factors as the nature and extent of contamination, the existence of potential pathways of human exposure including ground or surface water contamination, air emissions, and food chain contamination), the size and potential susceptibility of the community within the likely pathways of exposure, the comparison of expected human exposure levels to the short-term and long-term health effects associated with identified hazardous substances and any available recommended exposure or tolerance limits for such hazardous substances, and the comparison of existing morbidity and mortality data on diseases that may be associated with the observed levels of exposure. The Administrator of ATSDR shall use appropriate data, risks assessments, risk evaluations and studies available from the Administrator of EPA."

In accordance with the CERCLA section cited, this Health Assessment has been conducted using available data. Additional Health Assessments may be conducted for this site as more information becomes available.

The conclusions and recommendations presented in this Health Assessment are the result of site specific analyses and are not to be cited or quoted for other evaluations or Health Assessments.

Use of trade names is for identification only and does not constitute endorsement by the Public Health Service or the U.S. Department of Health and Human Services.

**PUBLIC HEALTH ASSESSMENT**

**CORNELL DUBILIER ELECTRONICS INCORPORATED**

**SOUTH PLAINFIELD, MIDDLESEX COUNTY, NEW JERSEY**

**CERCLIS NO. NJD981557879**

**Prepared by:**

**Hazardous Site Health Evaluation Program  
Consumer and Environmental Health Services  
Division of Environmental and Occupational Health  
New Jersey Department of Health and Senior Services  
Under a Cooperative Agreement with  
Agency for Toxic Substances and Disease Registry**

## FOREWORD

The Agency for Toxic Substances and Disease Registry, ATSDR, was established by Congress in 1980 under the Comprehensive Environmental Response, Compensation, and Liability Act, also known as the *Superfund* law. This law set up a fund to identify and clean up our country's hazardous waste sites. The Environmental Protection Agency, EPA, and the individual states regulate the investigation and clean up of the sites.

Since 1986, ATSDR has been required by law to conduct a public health assessment at each of the sites on the EPA National Priorities List. The aim of these evaluations is to find out if people are being exposed to hazardous substances and, if so, whether that exposure is harmful and should be stopped or reduced. (The legal definition of a health assessment is included on the inside front cover.) If appropriate, ATSDR also conducts public health assessments when petitioned by concerned individuals. Public health assessments are carried out by environmental and health scientists from ATSDR and from the states with which ATSDR has cooperative agreements.

**Exposure:** As the first step in the evaluation, ATSDR scientists review environmental data to see how much contamination is at a site, where it is, and how people might come into contact with it. Generally, ATSDR does not collect its own environmental sampling data but reviews information provided by EPA, other government agencies, businesses, and the public. When there is not enough environmental information available, the report will indicate what further sampling data is needed.

**Health Effects:** If the review of the environmental data shows that people have or could come into contact with hazardous substances, ATSDR scientists evaluate whether or not these contacts may result in harmful effects. ATSDR recognizes that children, because of their play activities and their growing bodies, may be more vulnerable to these effects. As a policy, unless data are available to suggest otherwise, ATSDR considers children to be more sensitive and vulnerable to hazardous substances. Thus, the health impact to the children is considered first when evaluating the health threat to a community. The health impacts to other high risk groups within the community (such as the elderly, chronically ill, and people engaging in high risk practices) also receive special attention during the evaluation.

ATSDR uses existing scientific information, which can include the results of medical, toxicologic and epidemiologic studies and the data collected in disease registries, to determine the health effects that may result from exposures. The science of environmental health is still developing, and sometimes scientific information on the health effects of certain substances is not available. When this is so, the report will suggest what further public health actions are needed.

**Conclusions:** The report presents conclusions about the public health threat, if any, posed by a site. When health threats have been determined for high risk groups (such as children, elderly, chronically ill, and people engaging in high risk practices), they will be summarized in the conclusion section of the report. Ways to stop or reduce exposure will then be recommended in the public health action plan.

ATSDR is primarily an advisory agency, so usually these reports identify what actions are appropriate to be undertaken by EPA, other responsible parties, or the research or education divisions of ATSDR. However, if there is an urgent health threat, ATSDR can issue a public health advisory warning people of the danger. ATSDR can also authorize health education or pilot studies of health effects, full-scale epidemiology studies, disease registries, surveillance studies or research on specific hazardous substances.

**Interactive Process:** The health assessment is an interactive process. ATSDR solicits and evaluates information from numerous city, state and federal agencies, the companies responsible for cleaning up the site, and the community. It then shares its conclusions with them. Agencies are asked to respond to an early version of the report to make sure that the data they have provided is accurate and current. When informed of ATSDR's conclusions and recommendations, sometimes the agencies will begin to act on them before the final release of the report.

**Community:** ATSDR also needs to learn what people in the area know about the site and what concerns they may have about its impact on their health. Consequently, throughout the evaluation process, ATSDR actively gathers information and comments from the people who live or work near a site, including residents of the area, civic leaders, health professionals and community groups. To ensure that the report responds to the community's health concerns, an early version is also distributed to the public for their comments. All the comments received from the public are responded to in the final version of the report.

**Comments:** If, after reading this report, you have questions or comments, we encourage you to send them to us.

Letters should be addressed as follows:

Attention: Chief, Program Evaluation, Records, and Information Services Branch, Agency for Toxic Substances and Disease Registry, 1600 Clifton Road (E-56), Atlanta, GA 30333.

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## **ACRONYMS**

<b>ATSDR</b>	<b>Agency for Toxic Substances and Disease Registry</b>
<b>USEPA</b>	<b>United States Environmental Protection Agency</b>
<b>FDA</b>	<b>Food and Drug Administration</b>
<b>NJDEP</b>	<b>New Jersey Department of Environmental Protection</b>
<b>NJDHSS</b>	<b>New Jersey Department of Health and Senior Services</b>
<b>NJDOA</b>	<b>New Jersey Department of Agriculture</b>
<b>SPHD</b>	<b>South Plainfield Health Department</b>

## SUMMARY

This Public Health Assessment serves to evaluate the public health issues associated with the Cornell Dubiller Electronics, Incorporated (CDE) Site, which has recently been proposed for addition to the National Priority List (NPL). NPL or "Superfund" Sites represent those hazardous waste sites which are associated with significant public health concern in terms of the nature and magnitude of contamination present, and the potential to adversely impact the health of populations in their vicinity.

The human exposure pathways associated with known contaminated environmental media within or associated with the CDE Site have been evaluated and actions have been taken and/or planned that are consistent with the protection of the public health. At the CDE Site, the known contaminated media include; soil, sediments, and surface water. The possible impact the Site's contamination on area groundwater will also be examined.

The New Jersey Department of Health and Senior Services (NJDHSS) will collaborate with environmental agencies such as the U.S. Environmental Protection Agency (USEPA) and the New Jersey Department of Environmental Protection (NJDEP) to contribute a health component to proposed and ongoing remedial activities.

The CDE Site is located at 333 Hamilton Boulevard in South Plainfield, Middlesex County, New Jersey. The site consists of approximately 25 acres in an industrial/residential area. From 1936 until 1962, CDE manufactured electronic parts and components, including capacitors, at the site. CDE also tested transformer oils. It is alleged that the company dumped directly onto the ground materials that were contaminated with polychlorinated biphenyls (PCBs) and other hazardous substances. The CDE site is currently known as Hamilton Industrial Park and is occupied by approximately 15 commercial businesses.

Soil, surface water, and sediments were sampled and analyzed by the EPA in June, 1994, indicated that the soil on the site contained concentrations of PCBs and trichloroethylene that were significantly above background levels. In addition, EPA collected soil samples from residential properties bordering the site and initiated a study of the nearby waters of the Bound Brook in June of 1997. As part of this study, water, sediment, and fish samples were collected from the Bound Brook and New Market Pond. Fish collected from Bound Brook were found to contain PCBs at levels higher than the US Food and Drug Administration action level of 2.0 ppm. In response to the level of PCBs detected in the fish, on August 8, 1997, NJDHSS, NJDEP, and NJDOA in coordination with the USEPA, issued an interim fish consumption advisory for the entire length of the Bound Brook, Middlesex County. In August of 1997, ATSDR issued a separate fish consumption advisory for the Bound Brook, New Market Pond, and the streams that feed into them. The advisory warned residents that the fish were contaminated and that eating them could cause health problems. EPA is currently collecting additional sediment samples to determine the extent of the PCB contamination from portions of the Bound Brook between New Market Pond and the Raritan River.

In October, 1997, EPA collected and analyzed additional surface soil and indoor dust samples for PCB from 16 residential properties located across the street from the CDE Site. PCB levels in indoor dust ranged from none detected to 205 ppm (or 117 micrograms (ug) total PCBs in sample mass). At the request of EPA, the ATSDR evaluated the analytical data collected from surface soil and dust. Based on the data, the ATSDR's health consultation concluded that PCBs in indoor dust and surface soils are at levels of public health concern.

In addition to this health consultation, the ATSDR and the New Jersey Department of Health and Senior Services (NJDHSS) have completed several health consultations for the CDE Site between 1996 and 1998. On the basis of the information reviewed, ATSDR and NJDHSS have concluded that the CDE Site in its present state poses a public health hazard because the soil on the site contained excess levels of PCBs and off site migration of site related contaminants poses a threat to area residents living in the vicinity of site. Currently, additional data collected from a daycare located near the site are being evaluated by ATSDR.

The public health actions taken by the ATSDR/NJDHSS at the site include preparation of a fact sheet for the CDE site and its distribution to local health agencies and other interested parties and a fish advisory issued for the area residents. In addition, the ATSDR/NJDHSS will assist the South Plainfield Health Department (SPHD) by providing public health education materials and professional expertise to explain the potential implications of human exposure to PCBs. Such assistance would be primarily in the form of fact sheets on the potential health effects that might result from PCB exposure; however, in addition, professional expertise would be provided as needed at public availability sessions that might be scheduled by SPHD.

## BACKGROUND

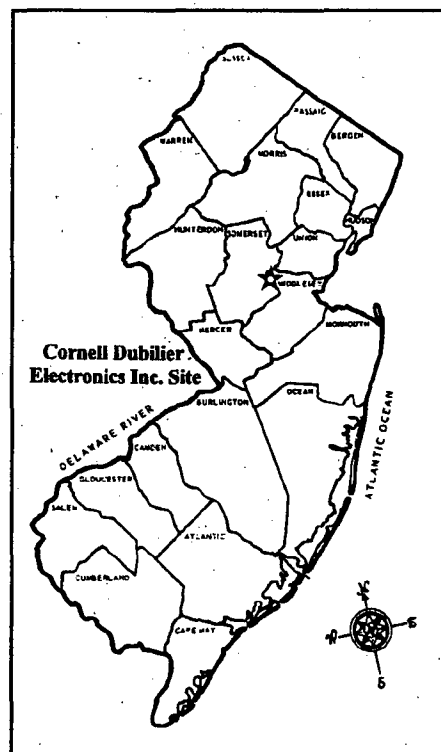
The ATSDR and the NJDHSS have completed several health consultations for the CDE Site between 1996 and 1998. This public health assessment will evaluate and summarize the activities undertaken and or planned by the ATSDR and the NJDHSS.

### A. Site Description and History

The Comeil Dubiiler Elecfronics, Incorporated (CDE), Site is located at 333 Hamilton Boulevard in South Plainfield, Midtilesex County, New Jersey (see inset). It consists of approximately 25 acres in an industrial/residential area. The site is bordered by residences and commercial businesses from the south to the north. An unnamed tributary of the Bound Brook borders the property on the southeast. The Bound Brook and the unnamed tributary converge approximately 800 meters downstream of the site. Bound Brook then flows west for approximately 3,000 meters and enters New Market Pond. Conrail railroad tracks crisscross the unnamed tributary just north of the site. Other industries are scattered to the northeast and east of the site, on the side opposite the Conrail tracks.

From 1936 to 1962, CDE manufactured electronic parts and components, including capacitors. CDE tested transformer oils, and it is alleged that the company dumped materials contaminated with polychlorinated biphenyls (PCBs) and other hazardous substances directly onto the soil at the site. Currently known as Hamilton Industrial Park, the site is occupied by approximately 15 commercial businesses. Numerous companies have rented locations at the site and operated businesses there over the years. A paved driveway is used to enter the industrial park, and the grounds surrounding the buildings are paved. A vacant field at the back of the buildings is fenced and posted with signs indicating the presence of hazardous material.

In June 1994, soil, surface water, and sediments were sampled and analyzed by EPA. The results of the sample analyses indicated that concentrations of PCBs and trichloroethylene (TCE) in the site soils were significantly above background levels (background levels are levels typical of naturally occurring concentrations or of concentrations found in uncontaminated areas). EPA conducted additional soil and sediment sampling in February 1996. PCBs, alpha-chlordane, and TCE were detected in the soil samples, and PCBs were detected in sediment samples, respectively, at levels significantly above background levels.



PCBs were also detected in the sediment of the unnamed tributary of the Bound Brook. PCB contamination of more than one tenth of a mile of wetland frontage of the tributary was documented. At least two fisheries are known to exist within the target distance limit. A sediment sample collected from the stream near the back of the property indicated the presence of PCBs, 1,2 dichloroethene, TCE, and lead. PCBs, 1,2 dichloroethene, TCE, and heavy metals were also detected in surface water samples collected from the same location. In addition, EPA collected soil samples from residential properties bordering the site and initiated a study of the nearby waters of the Bound Brook in June of 1997. As part of this study water, sediment, and fish samples were collected from the Bound Brook and New Market Pond. Fish collected from Bound Brook were found to contain PCBs at levels higher than the US Food and Drug Administration action level of 2.0 ppm. In response to the level of PCBs detected in the fish, on August 8, 1997, NJDHSS, NJDEP, and NJDOA in coordination with the USEPA, issued an interim fish consumption advisory for the entire length of the Bound Brook, Middlesex County. In August of 1997, ATSDR issued a separate fish consumption advisory for the Bound Brook, New Market Pond, and the streams that feed into them. The advisory warned residents that the fish were contaminated and that eating them could cause health problems. EPA is currently collecting additional sediment samples to determine the extent of the PCB contamination from portions of the Bound Brook between New Market Pond and the Raritan River.

In October 1997, EPA collected surface soil samples from 16 residential properties located across the street from the CDE Site. The soils were analyzed for PCBs. Approximately 20 surface soil samples were collected from each residential property. PCB levels in surface soils ranged from non-detect to 22 parts per million (ppm). In addition, on November 17 and 18, 1997, EPA collected indoor dust samples from 12 residential properties located across the street from the CDE Site. Samples were collected from carpeted and noncarpeted areas. Between 2 and 4 samples were collected from each house, yielding a total of 37 samples. The dust samples were analyzed for PCBs using EPA method 8080/SW-846. The objective of this analysis was to determine the extent of PCB-contamination in residences southwest of the Site. PCB levels in indoor dust ranged from non-detected to 205 ppm (or 117 micrograms (ug) total PCBs in sample mass).

Due to the extensive on-site contamination and its migration, the EPA has issued a Superfund order to the property owners (CDE) to conduct the following clean-up actions: 1) Restrict access to areas known to be contaminated with PCBs; 2) Take necessary actions to limit the movement of contaminants to Bound Brook through surface water runoff; and 3) Pave driveways and parking areas within the industrial park.

#### Previous ATSDR and NJDHSS Activity

The ATSDR and the NJDHSS have completed several health consultations for the CDE Site in 1996, 1997, and 1998 and issued a fish consumption advisory. The following are summaries of the activities:

### **Health Consultation of September 1996**

EPA Region II requested that ATSDR review analytical data from a fenced area at the Site and determine whether polychlorinated biphenyls (PCBs) in the soil were at levels of public health concern. ATSDR completed a health consultation for the Site in September 1996 (Appendix 2).

The health consultation reported that a fenced area of 1.5 acres was the location of a truck driving school. The school was reported to have been in operation 8 hours a day, 6 days a week since February 1996. Tractor trailers maneuver in the fenced area, while instructors outside the vehicles guide the drivers through their training. Although the composition of the ground surface within the fenced area varies, it generally consists of a compacted mixture of soil, rock, and crushed brick. When weather conditions are dry, dust is airborne within the fenced area during truck maneuvers; this may result in significant exposure (through inhalation) to dust containing PCBs, and may result in off-site migration of PCBs. The following conclusions were made by ATSDR:

1. In the fenced area, PCBs are present in the surface soil at levels of public health concern;
2. PCBs may be migrating off the site during dry conditions when dust is generated during truck maneuvers; and
3. The extent of PCB contamination in soil in the fenced area has not been adequately defined.

Recommendations were made to conduct the following activities:

1. Immediately stop exposure to PCBs in soil in the fenced area;
2. Prevent off-site migration of PCBs in dust or soil; and
3. Characterize the extent of contamination in the fenced area.

### **Health Consultation of October 1996**

EPA Region II had requested that the ATSDR review analytical data from the CDE site and determine if contaminants in the soil are at levels of public health concern. ATSDR completed a health consultation for the site in October 1996 (Appendix 3). Based on the limited analytical data collected at the CDE site, the following conclusions were made:

1. The limited sampling (23 sample locations for 25 acres) was inadequate to completely characterize the extent of contamination at the site;
2. Lead concentrations that present a public health concern were not widespread across the site; however, lead concentration in one area was at levels of public health concern;

3. Cadmium was not present in on-site surface soils at levels of public health concern; and
4. PCBs were present at levels of public health concern in sampled areas at the site. Chronic exposure to PCBs in surface soils presents a public health concern to on-site workers and trespassers.

Recommendations were made to conduct the following activities:

1. Conduct additional sampling to adequately characterize the extent of contamination at the site;
2. Prevent exposure to PCBs in surface soil at levels of public health concern; and
3. Prevent off-site migration of PCBs in dust or soil.

#### **Health Consultation of May 1997**

The USEPA Region II, requested that ATSDR comment on the public health threat posed by indoor PCB contamination at the CDE Site. ATSDR completed a health consultation for the CDE site in May 1997 (Appendix 4).

The following conclusions were made by ATSDR:

1. Based on the available information, the site poses a potential health threat to workers due to the presence of indoor levels of PCB contamination. Although short-term effects are not likely to occur with the levels of contamination, the site does pose a potential long-term health threat to workers. Family members may also be exposed to PCBs carried home on the shoes or clothing of workers; and
2. Wipe samples for lead and cadmium are useful as a qualitative indicator of contamination, but cannot be used to assess human exposures. Air sampling data would be more useful in qualitatively estimating potential human exposures.

Recommendations were made to conduct the following activities:

1. Consideration should be given to conducting indoor air sampling to determine the potential health threat posed by cadmium and lead contamination. If a building is unoccupied, aggressive sampling should be conducted to simulate activity;
2. If any workers are experiencing health effects, they should be evaluated by a health care provider for PCB exposure; and

3. This site will be considered for an exposure investigation by the ATSDR Exposure Investigation section.

#### Health Consultation of July 1997

At the request of the Health Officer of the borough of South Plainfield, a meeting was held on February 5, 1997, which was attended by representatives of the South Plainfield Health Department (SPHD), the New Jersey Department of Health and Senior Services (NJDHSS), the Agency for Toxic Substances and Disease Registry (ATSDR) Region II, and the US Environmental Protection Agency (EPA) Region II.

During the meeting various exposure pathways and level of contaminants were discussed. The surface soil sampling events have indicated the presence of polychlorinated biphenyls (PCBs), lead, and cadmium at levels of public health concern at various locations on the CDE site. Based on the results of the June 1996 samplings, which showed high levels of PCBs in the surface soil of the fenced and unpaved area used for a truck driving school, the permit for operating a truck driving school within this area was revoked by the borough of South Plainfield in October of 1996.

As requested by the Health Officer for South Plainfield, NJDHSS and ATSDR will assist the South Plainfield Health Department by providing public health education materials and professional expertise to explain the potential implications of human exposure to PCBs. Such assistance would be primarily in the form of "fact sheets" on the potential health effects that might result from exposure to these contaminants. In addition, however, professional expertise would be provided as needed at public availability sessions that might be scheduled by the SPHD (Appendix 5).

The following recommendation was made in the health consultation:

As soon as practicable, EPA, with the assistance of NJDHSS and ATSDR, should determine and take all necessary and appropriate interim actions which would be required to interrupt the potential exposure pathway caused by dust generation on the dirt/gravel road which traverses the site property.

#### Health Consultation of July 1997

EPA Region II requested that ATSDR determine the health implications to emergency personnel (such as police officers, fire fighters, and medical personnel) who may come in contact with PCB contamination at the CDE site. ATSDR completed this health consultation in July 1997 (Appendix 6). The main conclusion made by ATSDR was that the site does not pose a health threat to fire fighters, police, medical personnel, or other emergency personnel due to the anticipated short duration of exposure to PCB contamination. The health consultation recommended that the personnel accessing the site and coming in contact with contaminated areas should perform appropriate decontamination procedures prior to exiting the site.

### **Health Consultation of September 1997**

EPA requested that ATSDR review analytical data of fish samples collected from surface water near the CDE site and determine if polychlorinated biphenyls (PCBs) are present in fish at levels of public health concern.

Available information indicated that fish are being caught and eaten from the Bound Brook and New Market Pond (Appendix 7). Based on the available data, the ATSDR concluded that PCBs in fish collected in surface water near the CDE Site exceed FDA tolerance level of 2.0 ppm for PCBs in fish and are at levels of public health concern. ATSDR recommended that fish that contain PCB levels greater than 2 parts per million, in the edible portion of the fish, should not be eaten.

### **Health Consultation of May 1998**

The USEPA requested that the ATSDR evaluate analytical data from residential properties located across the street from the Site and determine if PCBs in indoor dust and surface soils are at levels of public health concern. ATSDR completed a health consultation for the site in May 1998 (Appendix 8). The following conclusions were made by ATSDR:

1. Elevated levels of PCBs were detected in indoor dust and in surface soils at residential properties that may pose a health concern or potential health concern to the residents. The health evaluations for the residential properties are presented in the Appendix 7;
2. The nature and extent of off-site migration of PCB contaminated dust via wind has not been determined; and
3. The nature and extent of surface soil PCB contamination in this residential community has not been determined.

Recommendations were made to conduct the following activities:

1. Prevent potential exposure to PCBs in surface soil at levels of public health concern. ATSDR believes that an interim measure or permanent solution to the contaminated residential yards and/or indoor dust should be put in place within six months.
2. As additional data becomes available on the extent and degree of off-site contamination, provide health education to residents on ways to reduce their potential exposure to PCBs present in indoor dust and surface soils. ATSDR will assist in the health education at this site through DHAC's Community Involvement Branch.
3. Appropriate cleaning methods should be used in the homes where elevated levels of PCBs were detected in indoor dust. Wet/damp dusting and mopping on floors and hard surfaces

with a cleaning solution such as Mr. Clean should be used. These products are mineral-oil-based cleaners that help to clean up the PCBs. Carpets should also be shampooed with these products. Prior to cleaning of the home interior surfaces by EPA, the use of a regular vacuum cleaner to remove dust is not recommended unless a HEPA filter is placed on the vacuum cleaner exhaust.

4. As needed, additional dust suppression techniques should be used at the site to prevent off-site migration of contaminated dust.
5. Conduct indoor dust sampling at residential properties where only surface soil samples was conducted.
6. Determine if other residences in the area are contaminated (include soil samples from properties located upwind of the facility).

#### **ATSDR Fish Consumption Advisory**

In August 1997, ATSDR issued a fish consumption advisory for the Bound Brook, New Market Pond and the streams that feed into them. The advisory warned residents of contaminated fish and advised the residents that consumption of the fish may be harmful to their health (Appendix 9).

#### **Current ATSDR Health Consultation**

Currently, the ATSDR is evaluating the surface soil and dust data collected from a Children Daycare and residences located near the Site.

#### **B. Site Visit**

Several site visits have been made to the Comeil Dubilier Electronics site in recent years by ATSDR and NJDHSS. The most recent visit to the site was on March 23, 1998. Steve Miller and Narendra P. Singh of NJDHSS, an EPA representative, and representatives of the owners of the property visited the site. The following observations were made during the visit.

- The CDE property, now known as Hamilton Industrial Park, is an actively used industrial property that includes numerous brick buildings. Approximately 15 tenant-occupied commercial businesses employing approximately 200 individuals are currently operating on the property. The area is not restricted and is potentially accessible to trespassers.
- A storm and drain sewer discharges into the unnamed tributary to Bound Brook on the northeastern border of the site, although there did not appear to be a significant current in the drainage channel. The confluence of the unnamed creek and Bound Brook is approximately

800 meters downstream of the site. Bound Brook then flows west for approximately 3,000 meters and enters New Market Pond. Available information indicates that fish are being caught and eaten from both Bound Brook and New Market Pond.

- A roadway nearly encircles the structures at the site, and the roadway separates the structures from a vacant field. Driveways and parking areas within the industrial park are paved. The southeastern portion of the vacant field is fenced and secured, making trespassing difficult. There is also a fence along a portion of the edge of the site bordering the stream. The remainder of the vacant field contains shrubs, high grass, and other vegetative cover. The ground surface is generally hard and appears to have been compacted. There are trees along Spicer Avenue, and trees line the area between the field and the stream.

### C. Demographics, Land Use, and Natural Resource Use

The surrounding area is primarily commercial and industrial in character, lightly mixed with residential properties. Approximately 500 persons reside within a quarter mile of the CDE site. The nearest residential homes are on Spicer Avenue and on the opposite side of Hamilton Boulevard, less than 200 feet from the site. The total number of people estimated to live within 1 mile of the site is 8,700.

A summary of population statistics within 1 mile of the CDE site, calculated using an area-proportion spatial analysis technique, is presented in Appendix 1.

On the basis of data from January 1994, the nearest municipal drinking water well was reported to be located 0.6 miles north and downgradient of the site. The drinking water purveyors serving people within a 4-mile radius of the site use supply wells that are within 4 miles of the site. Groundwater is a significant source of drinking water in this radius. The majority of the residents are served by the Middlesex or Elizabethtown water companies from these supply wells. The supply wells are blended with surface water, mainly from the Raritan River and the Delaware-Raritan Canal, which are reportedly not located in the surface water flow path from the site.

### D. Health Outcome Data

There are multiple sources of health outcome data in the state of New Jersey. State and local data for health outcome information include the New Jersey State Cancer Registry, Birth Defects Registry, Vital Statistics Records, Renal Dialysis Network, and Hospital Discharge Reports. Federal databases, such as those maintained by the agencies within the US Department of Health and Human Services (for instance, the National Cancer Institute and the National Institute for Occupational Safety and Health) are not site-specific, but may be used for comparison or evaluation purposes.

## COMMUNITY HEALTH CONCERNS

To gather information on community health concerns, NJDHSS contacted SPHD and EPA. The community concerns are related with off-site migration of site related contaminants and their effects on neighboring properties, the health risks associated with PCBs, and the community's role in the decision-making process. These concerns are discussed in the Public Health Implications Section.

## ENVIRONMENTAL CONTAMINATION AND OTHER HAZARDS

This section lists the contaminants of concern for the site. ATSDR and NJDHSS evaluate these contaminants in the subsequent sections of the public health assessment to determine whether exposure to the contaminants is a matter of public health significance. ATSDR and NJDHSS select and discuss these contaminants based upon the following factors:

- Concentrations of contaminants on and off the site
- Field data quality, laboratory data quality, and sample design
- Comparison of on-site and off-site concentrations with health assessment comparison values for noncarcinogenic endpoints and carcinogenic endpoints
- Community health concerns

In the data that follow in the subsections for on-site and off-site contamination, the listing of a contaminant does not mean that exposure to the contaminant will cause adverse health effects. The list only indicates which contaminants will be evaluated further in the health assessment.

When selected as a contaminant of concern in one medium, that contaminant will be reported in all media. The following acronyms are commonly used in discussing contaminants.

■	<b>CREG</b>	cancer risk evaluation guide (ATSDR)
■	<b>EMEG</b>	environmental media evaluation guide (ATSDR)
■	<b>LTHA</b>	lifetime health advisory (EPA)
■	<b>MCL</b>	maximum contaminant level (EPA)
■	<b>MCLG</b>	maximum contaminant level goal (EPA)
■	<b>NA</b>	not analyzed
■	<b>ND</b>	not detected

■	<b>NJDEP</b>	New Jersey Department of Environmental Protection
■	<b>NJMCL</b>	New Jersey maximum contaminant level
■	<b>NJSAL</b>	New Jersey soil action level
■	<b>PMCLG</b>	proposed maximum contaminant level goal (EPA)
■	<b>PPB</b>	parts per billion
■	<b>PPM</b>	parts per million
■	<b>RfC</b>	reference concentration (EPA)
■	<b>RfD</b>	reference dose (EPA)

Comparison values for public health assessments are contaminant concentrations in specific media used to select contaminants for further evaluation. These values include environmental media evaluation guides (EMEGs), cancer risk evaluation guides (CREGs), and other relevant guidelines.

CREGs are estimated contaminant concentrations based on one excess cancer in a million persons exposed over a lifetime. CREGs are calculated from EPA's cancer slope factors.

EPA's maximum contaminant level goal (MCLG) is a drinking water health goal. EPA believes that the MCLG represents a level at which no known or anticipated adverse effects on human health occur and which allows an adequate safety margin. Proposed maximum contaminant level goals (PMCLGs) are MCLGs that are being proposed. Maximum contaminant levels (MCLs) represent contaminant concentrations that a regulatory agency deems protective of public health. The levels are based on an estimated lifetime of 70 years, and an ingestion rate of 2 liters of water per day. MCLs are the maximum permissible levels, and they are enforceable standards.

EPA's reference dose (RfD) and reference concentration (RfC) are estimates of the daily exposure to a contaminant that is unlikely to cause adverse health effects. The environmental contamination section includes sampling data from a variety of media sources, including soil and air.

Contaminants of concern are selected by comparing contaminant levels detected at the site to public health assessment comparison values. These values may include ATSDR's environmental media evaluation guides (EMEGs) and cancer risk evaluation guides (CREGs), New Jersey soil action levels (NJSALs), and New Jersey maximum contaminant levels (NJMCLs). Selected contaminants are further evaluated in subsequent sections of this public health assessment to determine whether exposures to these contaminants are likely to result in harmful health effects in humans. When selected as a contaminant of concern in one medium (such as water, soil, or air), that contaminant is reported for all media.

## A. On-Site Contamination

### Soil

EPA collected 2 soil samples from each of 23 locations at the site; a surface soil sample (0–3 inches) and a subsurface sample (> 3 inches) were collected from each location. This health assessment reviews analytical data from the surface soil samples because soil contamination exposure in humans usually results from the surface soil. Twelve soil sampling locations were on the gravel part of the roadway, seven locations were in a vacant field, and four locations were on a footpath that runs north/south on the southeastern edge of the site.

The soil samples were analyzed for PCBs, lead, cadmium, silver, chromium, and mercury. EPA had requested that analytical results for PCBs, cadmium, and lead be evaluated for potential public health threats. Lead was detected in all surface soil samples collected from the roadway, vacant field, and footpath. Lead concentrations in the roadway samples ranged from 29 ppm to 340 ppm, with an average concentration of 167 ppm. With one exception, lead concentrations in the vacant field samples ranged from 66 ppm to 546 ppm, with an average concentration of 279 ppm. The one exception for lead was a location with a concentration of 21,000 ppm. Lead concentrations in the 4 footpath samples were 29 ppm, 105 ppm, 543 ppm, and 1,770 ppm. Cadmium was detected in 11 of the 12 roadway samples at concentrations ranging from less than 1 ppm to 19 ppm, with an average concentration of 3 ppm. Cadmium concentrations in the vacant field samples ranged from 1.1 ppm to 152 ppm, with an average concentration of 27.4 ppm. Cadmium was detected in 3 of the 4 footpath samples at concentrations ranging from 1.2 ppm to 51.4 ppm, with the average concentration being 18.9 ppm. PCBs were detected in all surface soil samples collected from the roadway, vacant field, and footpath. PCB concentrations in the roadway samples ranged from 8 ppm to 340 ppm, an average concentration of 87.5 ppm. With one exception, PCB concentrations in the vacant field samples ranged from 4.9 ppm to 100 ppm, with an average concentration of 42.4 ppm. The one exception was a vacant field sample that contained PCBs at 3,000 ppm. One footpath sample contained PCBs at a concentration of 1,000, but the other footpath samples had PCB concentrations ranging from 3.6 ppm to 90 ppm, an average concentration of 36.5 ppm.

### Soil Sampling (Fenced Area)

A number of surface soil and subsurface soil samples were collected from the fenced area at the back of the property. Four surface soil samples (0–3 inches or 0–6 inches) were collected and analyzed for PCBs (exposure to soil contamination usually occurs in the top 3 to 6 inches, so subsurface soil analytical data are not evaluated for potential public health threats). Aroclor 1254 was detected at the following concentrations in surface soil samples.

Sampling Point	Concentration of Aroclor 1254 (mg/kg)
0-6 inches	270
0-3 inches	4,700
0-6 inches	98
0-6 inches	51,000

### Sampling of Building

On March 21, 1997, the EPA Environmental Response Team supervised the collection of wipe samples from the interior surfaces of several on-site buildings. In addition, lead and cadmium wipe samples were collected from interior surfaces. The samples were collected by wiping a wet 3" x 3" cotton gauze pad over an area of 100-square centimeters (cm sq).

ATSDR was provided with the results from 27 samples collected from 12 buildings. Two unoccupied buildings were not sampled. The wipe sampling results indicated that elevated levels of PCBs (Aroclors 1254 and 1260) were present on various interior surfaces. Total PCBs ranged from non-detect to 680 micrograms per 100 cm sq. Approximately one-half of the wipe samples exceeded 10 micrograms per cm sq (combined Aroclors 1254, 1260). Cadmium concentrations ranged from non-detect to 34 micrograms/100 cm sq. Lead concentrations ranged from non-detect to 780 micrograms/cm sq.

### B. Off-Site Contamination

#### Fish Sampling

Fish sampling was conducted in surface waters adjacent to and near the CDE site, and fish were collected from the following locations:

- Three areas of the Bound Brook located downstream from the CDE site
- Two areas of New Market Pond
- The unnamed creek at a location immediately adjacent to the CDE site
- The unnamed creek at a reference location 1,000 meters upgradient of the CDE site

Fish filets were analyzed for PCBs. Table 1 shows the maximum concentrations of PCBs in the fish collected near the site.

**Table 1. Maximum concentrations of PCBs detected in fish filets**

<u>Location</u>	<u>Concentration</u> (parts per million)
Bound Brook	12.2
New Market Pond	36.0
Adjacent, CDE	9.8
Reference Location	7.8

Note: Fish ranged in total length from 4.1 to 25.6 inches (average: 10.9 inches). Fish ranged in total weight from 0.8 to 35.4 ounces (average: 9.7 ounces).

### **C. Quality Assurance and Quality Control**

In preparing this public health assessment, ATSDR and NJDHSS relied on the information provided in the referenced documents and assumes that adequate quality assurance and quality control measures were followed with regard to chain-of-custody, laboratory procedures, and data reporting. The validity of analyses and conclusions drawn for this health assessment is determined by the completeness and reliability of the referenced information. Environmental samples were analyzed under the guidelines of the EPA-certified laboratory program. While proper quality assurance and control measures were generally followed during sample collection and analyses, the quality of the data was affected by quality control sample contamination.

### **D. Physical and Other Hazards**

The CDE site is partially fenced and posted with hazard and "no trespassing" signs; the primary physical hazard to trespassers is the uneven surface of the vacant field.

### **E. Toxic Chemical Release Inventory Data**

NJDHSS did not conduct a search of the Toxic Chemical Release Inventory (TRI) in an attempt to identify any possible facilities that could be contributing to the environmental contamination near the site. The TRI is compiled by EPA and is based on estimated annual releases of toxic chemicals to the environment (air, water, soil, or underground injection) provided by certain industries.

## **PATHWAYS ANALYSIS**

To determine whether nearby residents or workers at the CDE site are exposed to site-related contaminants, ATSDR and NJDHSS evaluate the environmental and human components that lead to human exposure. This pathways analysis consists of five elements: (1) a source of contamination; (2) transport through an environmental medium; (3) a point of human exposure; (4) route of human exposure; and (5) an exposed population. ATSDR and NJDHSS classify exposure pathways into three groups: (1) "completed pathways," that is, those in which exposure has occurred, is occurring, or will occur; (2) "potential pathways," that is, those in which exposure might have occurred, may be occurring, or may yet occur; and (3) "eliminated pathways," that is, those that can be eliminated from further analysis because one of the five elements is missing and will never be present, or in which no contaminants of concern can be identified. A summary of the pathways for the CDE site is discussed in the following section and presented in Table 2.

### **A. Completed Exposure Pathways**

#### **Surface Soil Pathway (On-Site Workers and Trespassers)**

A limited sampling event was conducted at the CDE site to locate and identify potential sources of contamination. Twenty-three sample locations were selected; this limited sampling is not an adequate characterization of the extent of contamination at the 25-acre site. Because site access is not restricted and there are residences located nearby on Spicer Avenue, it is anticipated that populations potentially exposed to contamination on the site will include on-site workers (adults), and trespassers from nearby residences (adults and children).

#### **Residential Surface Soils and Indoor Dust Pathway (Off-Site)**

Elevated levels of PCBs were detected in indoor dust and the surface soils at residential properties that may pose a health concern or potential health concern to the residents. The health evaluations for the residential properties are presented in the Appendix 8. The nature and extent of off-site migration of PCB contaminated dust via wind and soil PCB contamination in this residential community has not been determined.

#### **Consumption of Fish Pathway (Bound Brook and New Market Pond)**

Based on the available data, ATSDR concluded that PCBs in fish collected in surface water near the CDE site exceed FDA tolerance levels for PCBs in fish, and are at levels of public health concern.

Table 2 presents a summary of the completed human exposure pathways at the CDE site.

**Table 2. Completed exposure pathways**

EXPOSURE PATHWAY ELEMENTS					
SOURCE	ENVIRONMENTAL MEDIA	POINT OF EXPOSURE	ROUTE OF EXPOSURE	EXPOSED POPULATION	TIME
CDE Site	Surface Soil	On-Site	Ingestion, Inhalation, Skin contact	Workers and Trespassers	Present
CDE Site	Fish	Bound Brook and New Market Pond	Ingestion	Consumption of Fish from Bound Brook and New Market Pond	Present
CDE Site	Surface soils and dust	Residential Properties Located Across the street from CDE Site	Ingestion, Inhalation, Skin contact	Residents living in the houses located across the CDE Site	Present

## PUBLIC HEALTH IMPLICATIONS

### A. Toxicological Evaluation

#### Introduction

In this section, NJDHSS will discuss the health effects in persons exposed to specific contaminants. To evaluate health effects, ATSDR has developed a minimal risk level (MRL) for contaminants commonly found at hazardous waste sites. The MRL is an estimate of daily human exposure to a contaminant below which noncancer adverse health effects are unlikely to occur. MRLs are developed for each route of exposure, such as ingestion and inhalation, and for the length of exposure, such as acute (less than 14 days), intermediate (15 to 364 days), and chronic (greater than 365 days). ATSDR presents these MRLs in Toxicological Profiles, which are chemical-specific profiles that provide information on health effects, environmental transport, human exposure, and regulatory status. In the following discussion, NJDHSS used information from the ATSDR Toxicological Profiles for the contaminants of concern at the site. NJDHSS uses an EPA reference dose (RfD) as a health guideline when an MRL is not available. This section contains discussion of the health effects in persons exposed to PCBs, cadmium, and lead from contaminated soil associated with the CDE site. Significance of the consumption of fish containing elevated levels of PCBs is also discussed, as is the significance of elevated PCB levels detected in the surface wipe samples collected from inside the buildings on the CDE site. The Food and Drug Administration has set tolerances for PCBs in fish.

Health effects evaluations are accomplished by estimating the amount (or dose) of those contaminants that a person might come in contact with on a daily basis. This estimated exposure dose is then compared to established health guidelines. People who are exposed for some critical length of time to contaminants of concern at levels above established guidelines are potentially more likely to have associated illnesses or disease. The toxicological effects of the contaminants detected in the environmental media have been considered singly. The cumulative or synergistic effects of mixtures of contaminants may serve to enhance their public health significance. Additionally, children may have greater adverse health effects than adults from both individual contaminants or mixtures of contaminants. This situation depends upon the specific chemical being ingested or inhaled, its pharmacokinetics in children and adults, and its toxicity in children and adults.

#### *PCBs*

Workers on the site and trespassers (adults and children) visiting the CDE site may be exposed to PCB-contaminated surface soils. Exposure doses for PCB and subsequent lifetime excess cancer risk estimates were calculated based upon the average reported concentrations of 87.5 ppm from the roadway and the maximum concentration of 3000 ppm detected from the vacant field. The toxicological evaluation of the completed exposure pathway at the site is based upon an adult exposure duration of 40 years for trespassers and 30 years for on-site workers, and a duration of 10 years for children who are trespassers.

Estimation of exposure doses for workers were based on the following assumptions: adult body weight of 70 kg; ingestion rate of 100 mg/day; and 5 site visits a week for a period of 11 months per year.

To estimate exposure doses of trespassers, the following assumptions were made: adult body weight of 70 kg; ingestion rate of 100 mg/day; 2 site visits a week for a period of 8 months per year. For children, the following assumptions were made: child body weight of 20 kg; ingestion rate of 200 mg of soil per visit; 2 site visits a week for a period of 8 months per year.

PCBs can be absorbed into the body via ingestion, inhalation, or dermal exposure following ingestion of dust or soil, inhalation of PCB-laden dust, or direct dermal contact with PCBs in soil or dust. In humans, long-term exposure to PCBs can affect the skin and liver. PCBs have very low potential for producing acute toxic effects.

Based on an immunosuppressive effect seen in monkeys chronically exposed to PCBs, ATSDR has derived a chronic oral minimal risk level (MRL) for PCBs of 0.00002 mg/kg/day; an MRL is defined as an estimate of daily human exposure to a dose of a chemical that is likely to be without an appreciable risk of adverse noncancerous effects over a specified duration of exposure.

At the average concentration of PCBs detected (87.5 mg/kg), the estimated exposure dose for an adult trespasser of  $1.25 \times 10^{-5}$  mg/kg/day is below the chronic oral MRL for PCBs. At such concentrations, noncarcinogenic health effects among adults are not generally expected. However, for a child trespasser, the estimated exposure doses of  $1.57 \times 10^{-4}$  mg/kg/day would exceed the chronic oral MRL. Exposure doses do not exceed the no observed adverse effect levels for chronic exposure in humans (for effects other than cancer) cited in the ATSDR Toxicological Profile for PCB. EPA has determined that PCBs are probable human carcinogens. Carcinogenic risk based upon calculated exposure doses is estimated to be no apparent increased risk to adults and low increased risk to children. At the average concentration of PCBs detected (87.5 mg/kg), the estimated exposure dose for an adult worker of  $3.7 \times 10^{-5}$  mg/kg/day is slightly above the chronic oral MRL for PCBs. At such concentrations, noncarcinogenic health effects among adults are not generally expected. However, at a soil concentration of 3,000 ppm PCBs (the maximum concentration detected in any surface soil sample), the doses would exceed the MRL by more than 2 orders of magnitude for child trespassers. Carcinogenic risk based upon calculated exposure doses is estimated to be a moderate increased risk for children. At a soil concentration of 3,000 ppm PCBs (maximum concentration detected in any surface soil sample), the dose would exceed the MRL by more than 1 order of magnitude for an adult trespasser. Carcinogenic risk based upon calculated exposure doses is estimated to be a low increased risk for adult trespassers. At a soil concentration of 3,000 ppm PCBs (maximum concentration detected in any surface soil sample), the dose would exceed the MRL by more than 2 orders of magnitude for an adult worker. Carcinogenic risk based upon calculated exposure doses is estimated to be a moderate increased risk for adult workers. Additional exposure to PCBs by inhalation of PCB-laden dust and dermal absorption would potentially increase the received dose in both on-site workers and children who trespass.

### *Lead*

There is no current MRL or RfD for chronic oral exposure for lead. Inhaling or ingesting more than 500–1,000 micrograms of lead per gram of soil was a range that the Centers for Disease Control (CDC) previously considered could cause elevated blood lead levels in children. However, the CDC has since withdrawn this guideline because of the seriousness of lead exposure among children. CDC has indicated that there is sufficient evidence that adverse health effects occur at blood lead levels at least as low as 10 micrograms per deciliter in children. Lead is considered by EPA to be a probable human carcinogen. However, there are limited data describing the carcinogenicity of lead in humans. A cancer slope factor for lead has not been established; lifetime excess cancer risk estimates could not be calculated at this juncture. The limited analytical data indicate that elevated lead levels in surface soil samples are not widespread across the site. One sample location indicated the presence of lead at levels greater than 21,000 ppm. However, the extent of the elevated lead levels in the area around this sample location has not been adequately characterized.

### *Cadmium*

Cadmium was detected in most of the samples at average concentrations ranging from 3 ppm to 27.4 ppm. Exposure to cadmium may occur due to ingestion of contaminated soil or inhalation of cadmium-laden dust. Chronic exposure to low levels of cadmium via ingestion may adversely affect the kidneys and skeletal system. Inhalation of high levels of cadmium in air can damage the lungs, and chronic inhalation of low levels can cause kidney disease.

Based on kidney effects in humans chronically exposed to cadmium, ATSDR has derived a chronic oral minimum risk level (MRL) of 0.0007 mg/kg/day; an MRL is defined as an estimate of daily human exposure to a dose of a chemical that is likely to be without an appreciable risk of adverse noncancerous effects over a specified duration of exposure. Based on the standard default values (70 kg adult ingesting 100 milligrams of soil per day), an adult ingesting soil containing 27.4 ppm cadmium (maximum average concentration) will receive a dose approximately 1 order of magnitude less than the MRL. Assuming that a young child (30 kg body weight) may trespass on the site and ingest soil (200 milligrams per day) contaminated with cadmium at a concentration of 27.4 ppm, the child will receive a dose approximately 4 times less than the MRL.

### *Indoor Wipe Sampling*

PCB concentrations at this site have been detected as high as 680 micrograms/100 sq cm on indoor surfaces. PCBs at similar concentrations at other work places have been shown to raise serum PCB levels. EPA has developed a PCB spill clean-up policy under the Toxic Substances Control Act (TSCA). The TSCA policy is considered conservative and protective of public health. The TSCA spill policy calls for PCBs to be cleaned to 10 micrograms per 100 sq cm for high contact surfaces. In industrial settings, high contact surfaces are defined as surfaces that are repeatedly touched, often for long periods of time. Manned machinery and control panels are examples of high contact industrial

surfaces. Based on assessment of risk posed by PCBs on indoor hard surfaces, the dermal exposure route would be expected to be the route of greatest concern. PCB levels on indoor surfaces of 10 micrograms per 100 sq cm are associated with an oncogenic risk of  $1 \times 10^{-5}$ .

### *Fish Sampling*

Fish were collected from three areas of the Bound Brook located downstream from the CDE site; two areas of New Market Pond; the unnamed creek at a location immediately adjacent to the CDE site; and the unnamed creek at a reference location 1,000 meters upgradient of the CDE site. The Food and Drug Administration (FDA) has set tolerances for PCBs in the edible portions of fish at 2 ppm. Tolerances are established at levels that are sufficient for the protection of public health. The tolerance level of 2 ppm PCBs was exceeded in at least one sample of each of the species collected. PCBs are persistent in the environment and break down slowly. In water, PCBs partition significantly from water to aquatic organisms, such as fish. The bioconcentration factors of various PCBs in aquatic animals vary from 26,000 to 660,000. A bioconcentration factor (BCF) is defined as the ratio of the concentration of a contaminant in aquatic organisms to the concentration of the contaminant in the surrounding water. Evidence also indicates that PCBs biomagnify within the food chain. Based on the available data, ATSDR concludes that PCBs in fish collected in surface water near the CDE site exceed FDA tolerance levels for PCBs in fish and are at levels of public health concern.

### **B. Health Outcome Data Evaluation**

Health outcome data was not reviewed for the site. There were no more than approximately 200 people exposed to the contaminants at the site, and health outcome data for the site were not reviewed as the population size was too small for the application of relevant databases to detect if an increase in adverse health effects is present in the population.

### **C. Community Health Concerns Evaluation**

Residents had expressed concerns regarding potential health effects associated with exposure to site-related contaminants. In August, 1997, NJDHSS, NJDEP, and NJDOA, in coordination with the USEPA issued a interim fish advisory for the entire length of the Bound Brook, Middlesex County and posted signs warning the public not to consume fish from the entire length of the Bound Brook including the New Market Pond. This action was taken in response to an USEPA investigation of extensive PCB contamination at the CDE Site. The USEPA identified levels of PCBs in carp, white suckers and largemouth bass collected from New Market Pond, an impoundment of the Bound Brook, which exceeded the U.S. Food and Drug Administration's 2.0 ppm action level.

## **CONCLUSIONS**

1. On the basis of the information reviewed, ATSDR and NJDHSS have concluded that the CDE site in its present state poses a public health hazard as PCBs in fish, collected in surface water near the Site, exceed FDA tolerance levels for PCBs, elevated levels of PCBs were detected in indoor dust and surface soils at residential properties that may pose a health concern or potential health concern to the residents, workers, and trespassers (adults and children).
2. Available data and information do not adequately characterize the extent of contamination at the site. However, based on the available data the site poses a potential health threat to workers due to the presence of indoor levels of PCB contamination. Although short-term effects are not likely to occur given the levels of contamination, the site does pose a potential long-term health threat to workers. Family members may also be exposed to PCBs carried home on the shoes or clothing of workers. Wipe samples for lead and cadmium are useful as a qualitative indicator of contamination, but cannot be used to assess human exposures.

## **RECOMMENDATIONS**

### **Cease/Reduce Exposure**

1. Restrict public access to contaminated areas of the CDE site as much as is practicable and post the area to warn potential site trespassers of the potential hazards.
2. Utilize optimal dust control measures during remediation of the site to prevent off-site migration of PCBs in dust or soil. An interim measure or permanent solution to the contaminated residential yards and/or indoor dust should be put in place as soon as possible.
3. Different cleaning methods should be used in the homes where elevated levels of PCBs were detected in indoor dust by wet/damp dusting and mopping on floors and hard surfaces with a cleaning solution.
4. Advise site workers of the potential health threat so that precautionary measures may be taken (for example, dust control measures).
5. Any workers experiencing health effects should be evaluated for PCB exposure by a health care provider. This site should be considered for an exposure investigation by ATSDR and NJDHSS.
6. Do not eat fish if the edible portion of the fish contains PCBs at a concentration greater than 2 ppm.

### Site Characterization

1. Conduct additional sampling to adequately characterize the extent of contamination at the CDE site.
2. Consider conducting indoor-air sampling to determine the potential health threat posed by cadmium and lead contamination because air sampling data would be more useful in qualitatively estimating potential human exposures.
3. Consider additional actions at this site if indicated by changes in site conditions or by new environmental, toxicological, or health outcome data.
4. Determine if other residences in the area are contaminated (include soil samples from properties located upwind of the facility).

### PUBLIC HEALTH ACTION PLAN

The Public Health Action Plan (PHAP) for the CDE site contains a description of the actions to be taken by ATSDR and/or NJDHSS at or in the vicinity of the site subsequent to the completion of this public health assessment (PHA). The purpose of the PHAP is to ensure that this PHA not only identifies public health hazards but provides a plan of action designed to mitigate and prevent adverse human health effects resulting from exposure to hazardous substances in the environment. Included is a commitment on the part of ATSDR and NJDHSS to follow up on this plan to ensure that it is implemented. The public health actions to be implemented by ATSDR and NJDHSS are as follows.

#### A. Public Health Actions Undertaken by ATSDR and NJDHSS

1. Environmental data have been evaluated within the context of human exposure pathways and relevant public health issues.
2. NJDHSS, NJDEP, and NJDOA in coordination with the USEPA issued a interim fish advisory for the entire length of the Bound Brook, Middlesex County and posted signs warning the public not to consume fish from the entire length of the Bound Brook including the New Market Pond. This action was taken in response to an USEPA investigation of extensive PCB contamination at the Comeli Dubliier Electronics Site in South Plainfield, Middlesex County, New Jersey. In August 1997, ATSDR issued a fish consumption advisory for Bound Brook, New Market Pond, and the streams that feed into them. The advisory warned residents of contaminated fish and advised the residents that consumption of the fish could be harmful to their health.

3. NJDHSS prepared a site-specific fact sheet for the CDE site and made it available to local health agencies and other interested parties.

#### **B. Public Health Actions Planned by ATSDR and NJDHSS**

1. This document will be provided to the South Plainfield Health Department, Middlesex County, New Jersey.
2. NJDHSS and ATSDR will assist the South Plainfield Health Department (SPHD) by providing public health education materials and professional expertise to explain the potential implications of human exposure to PCBs. Such assistance would be primarily in the form of "fact sheets" on the potential health effects that might result from exposure to these contaminants; however, in addition, professional expertise would be provided as needed at public availability sessions that might be scheduled by the SPHD.
3. As additional data becomes available on the extent and degree of off-site contamination, provide health education to residents on ways to reduce their potential exposure to PCBs present in indoor dust and surface soils.
4. ATSDR will provide an annual followup to this PHAP, outlining the actions completed and those in progress. This report will be provided to persons who request it, and it will be placed in repositories that contain copies of this PHA.

#### **ATSDR Child Health Initiative**

ATSDR's Child Health Initiative recognizes that the unique vulnerabilities of infants and children demand special emphasis in communities faced with contamination in their environment. Children are at greater risk than adults from certain kinds of exposures to hazardous substances emitted from waste sites. They are more likely exposed because they play outdoors and they often bring food into contaminated areas. They are shorter than adults, which means they breathe dust, soil, and heavy vapors closer to the ground. Children are also smaller, resulting in higher doses of chemical exposure per body weight. The developing body systems of children can sustain permanent damage if toxic exposures occur during critical growth stages. Most importantly, children depend completely on adults for risk identification and management decisions, housing decisions, and access to medical care.

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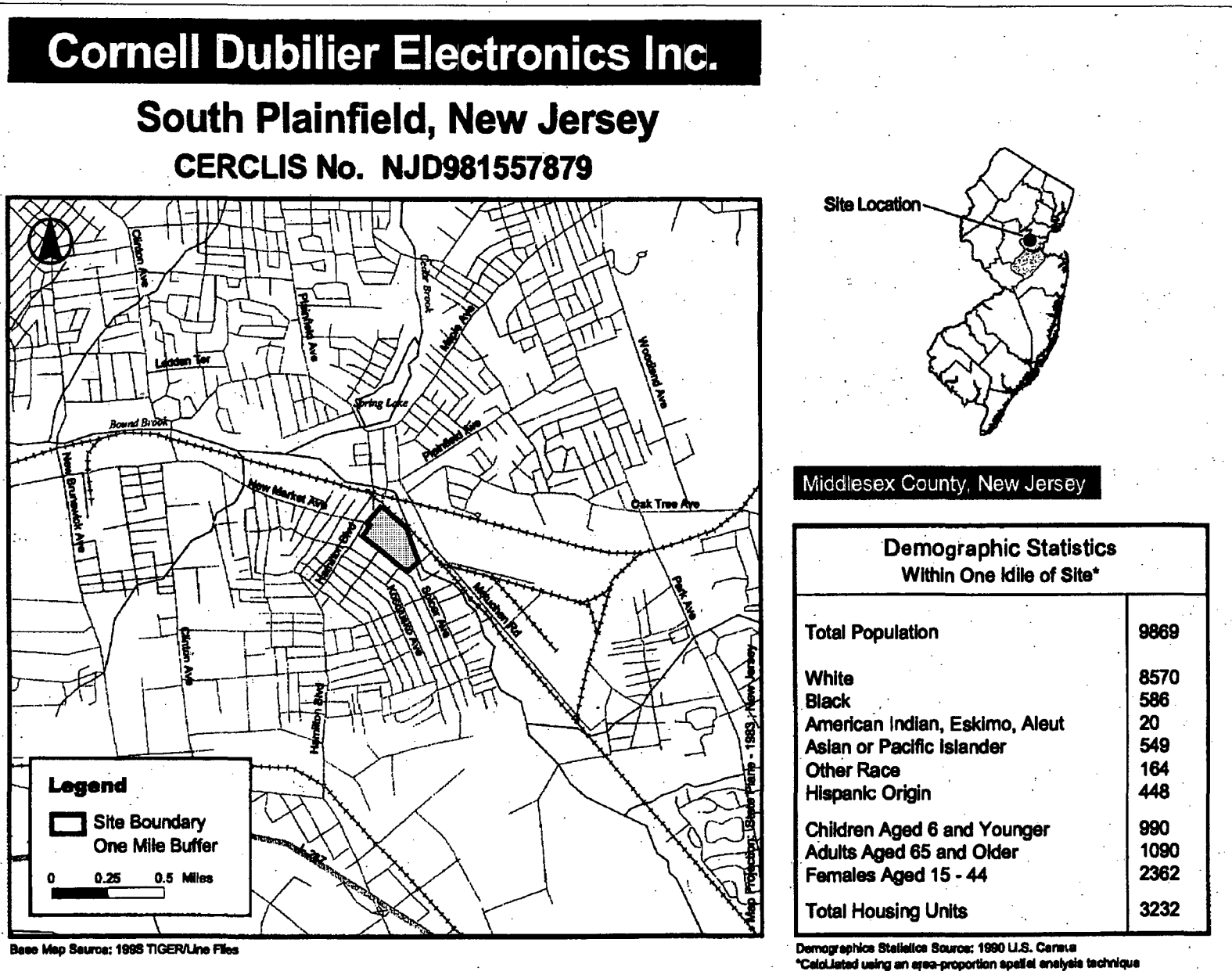
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## **Appendix 1 - Demographic Information**

Figure 1 - Demographic Information

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## **Appendix 2 - Health Consultation ( September 1996)**

Name: Cornell-Dubilier Electronics  
LOG #: 96-4046

## ATSDR Record of Activity

ROUTING:  
E. Skowronski  
CS FILE

UID #: syk5 Date: 9-17-96 Time: \_\_\_\_\_ am \_\_\_\_\_ pm \_\_\_\_\_

Site Name: Cornell-Dubilier Electronics City: South Plainfield  
Cnty: Middlesex State: NJ

CERCLIS #: \_\_\_\_\_ Cost Recovery #: 20GZ Region: 2

Site Status: (1)    NPL    ☒ Non-NPL    RCRA    Non-Site specific    Federal  
(2)    ☒ Emergency Response    Remedial    Removal    Other:

### Activities

   Incoming Call    Public Meeting    Health Consult    Site Visit  
   Outgoing Call    Other Meeting    Health Referral    Info Provided  
   Conference Call    ☒ Data Review    Written Response    Training  
   Incoming Mail    Other

Requestor and Affiliation: (1) Nick Magriples

Phone: \_\_\_\_\_ Address: \_\_\_\_\_  
City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

### Contacts and Affiliation

(31) Steve Jones ( ) \_\_\_\_\_  
( ) \_\_\_\_\_ ( ) \_\_\_\_\_

1-EPA	2-USCG	3-OTHER FED	4-STATE ENV	5-STATE HLT	6-COUNTY HLT
7-CITY HLTH	8-HOSPITAL	9-LAW ENFORCE	10-FIRE DEPT	11-POISON CTR	
12-PRIV CITZ	13-OTHER	14-UNKNOWN	15-DOD	16-DOE	
17-NOAA	18-OTHR STATE	19-OTHR CNTY	20-OTHR CITY	21-INTL	
22-CITZ GROUP	23-ELECT. OFF	24-PRIV. CO	25-NEWS MEDIA	26-ARMY	
27-NAVY	28-AIR FORCE	29-DEP LOG AGCY	30-NRC	31-ATSDR	

### Program Areas

   Health Assessment    Health Studies    Tox Info-profile  
   Worker Health    Petition Assessment    Health Surveillance  
   Tox Info-Nonprofile    Admin    Emergency Response  
   Disease Registry    Subat-Spec Research    Other (Technical Assist)  
☒ Health Consultation    Exposure Registry    Health Education

### Background and Statement of Issues:

The Region 2 U.S. Environmental Protection Agency (EPA) has requested that the Agency for Toxic Substances and Disease Registry (ATSDR) review analytical data from a fenced area at the Cornell-Dubilier Electronics Site in South Plainfield, New Jersey, and determine if polychlorinated biphenyls (PCBs) in soil are at levels of public health concern.

The fenced area, which covers 1.5 acres, is the location of a truck

driving school. The school has reportedly been in operation since February 1996, 8 hours per day, 6 days per week. Tractor trailers maneuver in the fenced area, while instructors outside of the vehicles guide the drivers through their training. An office trailer, parking area, and 2 canopied rest areas with benches are in the fenced area. A barbecue is located near the office trailer.

Although the composition of the ground surface within the fenced area varies, it generally consists of a compacted mixture of soil, rock, and crushed brick. When weather conditions are dry, dust is airborne within the fenced area during truck maneuvers; this may result in significant exposure to PCB containing dust via inhalation, and may result in offsite migration of PCBs.

A number of surface soil and subsurface soil samples were collected from the fenced area and adjacent areas. Four surface soil (0 - 3 inches or 0 - 6 inches) were collected and analyzed for PCBs (exposure to soil contamination usually occurs in the top 3 to 6 inches, so subsurface soil analytical data are not evaluated for potential public health threats). Aroclor 1254 was detected at the following concentrations in surface soil samples.

Sampling Point	Concentration of Aroclor 1254 (mg/kg)
S23 (0 - 6 inches)	270
S25 (0 - 3 inches)	4,700
S24 (0 - 6 inches)	98
S29 (0 - 6 inches)	51,000

#### Discussion:

PCBs can be absorbed into the body via ingestion, inhalation, or dermal exposure following ingestion of dust or soil, inhalation of PCB laden dust, or direct dermal contact with PCBs in soil or dust.

In humans, long-term exposure to PCBs can affect the skin and liver: reproductive, endocrine, immunosuppressive, and carcinogenic effects have been observed in animal studies [1,2].

Based on an immunosuppressive effect seen in monkeys chronically exposed to PCBs, ATSDR has derived a chronic oral Minimal Risk Level (MRL) for PCBs of  $2.0 \times 10^{-5}$  mg/kg/day; an MRL is defined as an estimate of daily human exposure to a dose of a chemical that is likely to be without an appreciable risk of adverse noncancerous effects over a specified duration of exposure.

Using standard default values (70 kg adult ingesting 50 milligrams of soil per day), an adult ingesting soil containing 51,000 ppm PCBs will receive a dose 3 orders of magnitude greater than the MRL. At a soil concentration of 4,700 mg/kg PCBs, the dose would exceed the MRL by 2 orders of magnitude. Additional exposure to PCBs by potential

Name: Cornell-Dubilier Electronics  
LOG #: 56-4046

inhalation of dust and dermal absorption would potentially increase the received dose.

**Conclusions:**

Based on review of the data, ATSDR concludes:

PCBs are present in surface soil in the fenced area at levels of public health concern.

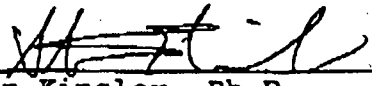
PCBs may be migrating off-site during dry conditions when dust is generated during truck maneuvers.

The extent of PCB contamination in soil in the fenced area has not been adequately defined.


**Recommendations:**

1. Immediately stop exposure to PCBs in soil in the fenced area.
2. Prevent off-site migration of PCBs in dust or soil.
3. Characterize the extent of contamination in the fenced area.

If further clarification is required, or additional information becomes available, please do not hesitate to contact this office at 404/639-0616.

  
Steven Kinsler, Ph.D.

Date: September 19, 1996

Concurrence: 

Date: 9-19-96

**References**

1. Toxicological Profile for Polychlorinated Biphenyls, U.S. Department of Health and Human Services, Agency for Toxic Substances and Disease Registry, April 1993
2. ATSDR Case Studies in Environmental Medicine, Polychlorinated Biphenyl Toxicity, U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry, June 1990.

cc:

PERIS

Ed Skowronski, Acting Chief, EICB

Steven Kinsler, Toxicologist, CS

Steve Jones, Region 2 ATSDR Regional Representative

### **Appendix 3 - Health Consultation ( October 1996)**

Name: Cornell-Dubilier Electronics  
LOG #: 97-1004

### ATSDR Record of Activity

FEB 4 2 55 PM '97

ROUTING:

~~E. Skowronski~~ *ES*  
CS FILE

UID #: syk5 Date: 10-7-96 Time: \_\_\_\_\_ am \_\_\_\_\_ pm \_\_\_\_\_

Site Name: Cornell-Dubilier Electronics City: South Plainfield  
Cnty: Middlesex State: NJ

CERCLIS #: \_\_\_\_\_ Cost Recovery #: 20GZ Region: 2

Site Status: (1) ☐ NPL ☒ Non-NPL ☐ RCRA ☐ Non-Site specific ☐ Federal  
(2) ☐ Emergency Response ☐ Remedial ☐ Removal ☐ Other:

#### Activities

☐ Incoming Call ☐ Public Meeting ☐ Health Consult ☐ Site Visit  
☐ Outgoing Call ☐ Other Meeting ☐ Health Referral ☐ Info Provided  
☐ Conference Call ☒ Data Review ☐ Written Response ☐ Training  
☐ Incoming Mail ☐ Other

Requestor and Affiliation: (1) Nick Magriples

Phone: \_\_\_\_\_ Address: \_\_\_\_\_  
City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

#### Contacts and Affiliation

(31) Steve Jones ( ) \_\_\_\_\_  
(31) Arthur Block ( ) \_\_\_\_\_

1-EPA	2-USCG	3-OTHER FED	4-STATE ENV	5-STATE HLT	6-COUNTY HLT
7-CITY HLTH	8-HOSPITAL	9-LAW ENFORCE	10-FIRE DEPT	11-POISON CTR	
12-PRIV CITZ	13-OTHER	14-UNKNOWN	15-DOD	16-DOE	
17-NOAA	18-OTHR STATE	19-OTHR CNTY	20-OTHR CITY	21-INTL	
22-CITZ GROUP	23-ELECT. OFF	24-PRIV. CO	25-NEWS MEDIA	26-ARMY	
27-NAVY	28-AIR FORCE	29-DEF LOG AGCY	30-NRC	31-ATSDR	

#### Program Areas

☐ Health Assessment ☐ Health Studies ☐ Tox Info-profile  
☐ Worker Health ☐ Petition Assessment ☐ Health Surveillnc  
☐ Tox Info-Nonprofile ☐ Admin ☐ Emergency Response  
☐ Disease Registry ☐ Subst-Spec Research ☐ Other (Technical Assist)  
☒ Health Consultation ☐ Exposure Registry ☐ Health Education

#### Background and Statement of Issues

The Region 2 U.S. Environmental Protection Agency (EPA) has requested that the Agency for Toxic Substances and Disease Registry (ATSDR) review analytical data from the Cornell-Dubilier Electronics Site in South Plainfield, New Jersey, and determine if contaminants in soil are at levels of public health concern [1].

Name: Cornell-Dubilier Electronics  
LOG #: 97-1004

The Cornell-Dubilier Electronics Site is located at 333 Hamilton Boulevard in South Plainfield, Middlesex County, New Jersey. The approximately 25 acre site is located in an industrial/commercial/residential area and is bordered by commercial businesses and residences on the south, west and north, and on the southeast, east, and northeast by an unnamed tributary to Bound Brook [2]. It is estimated that 540 persons reside within 0.25 miles of the site; the nearest residence is approximately 200 feet from the site [2].

During the 1950s, Cornell-Dubilier Electronics, Inc. manufactured electronic parts and components, and tested transformer oils. Discarded electronic components were landfilled onsite and transformer oils contaminated with PCBs were reportedly dumped directly onto site soils. The company vacated the site in the early 1960s [2].

The site is currently known as the Hamilton Industrial Park and is occupied by an estimated 15 commercial businesses. Numerous companies have operated at the site as tenants over the years [2]. A paved driveway is used to enter the park; the pavement ends within 100 yards of entering the park. It has been observed that vehicles entering the industrial park during dry conditions create airborne dust [2]. The driveway leads into a dirt/gravel/stone roadway that nearly encircles the business structures at the site. The roadway separates the structures from a heavily vegetated vacant field. Currently, there are no access restrictions at the site other than a 1.5 acre fenced area in the southeast portion of the vacant field that was formerly used by a truck driving school [2]. Analytical data of contaminants in soil in the fenced area were evaluated in a previous ATSDR Record of Activity (AROA) [3].

On June 27 and 29, 1996, the U.S. EPA Superfund Technical Assessment and Response Team (START) collected 2 soil samples from each of 23 locations at the site; a surface soil (0 - 3 inches) sample and a subsurface (greater than 3 inches) sample were collected from each location.

Twelve soil sampling locations were on the gravel part of the roadway, 7 locations were in the vacant field, 4 locations were on the footpath that runs north/south on the southeastern edge of the site. Because human exposure to contaminants in soil usually occurs in the top 0 to 3 inches of soil, this consultation will review analytical data from the surface soil samples only.

The soil samples were analyzed for Target Compound List Polychlorinated Biphenyls (TCL PCBs) and Target Analyte List (TAL) lead, cadmium, silver, chromium, and mercury [2]. Sample locations were selected to locate and identify potential sources of contamination at the site [2]. The EPA has requested that analytical results for polychlorinated biphenyls (PCBs), lead, and cadmium be evaluated for potential public health threats [1].

### Analytical Results

#### Lead

Lead was detected in all surface soil samples collected from the roadway, vacant field, and footpath. Lead concentrations in the roadway samples ranged from 29 parts-per-million (ppm) to 340 ppm (average concentration = 167 ppm). Lead concentrations in the 5 vacant field samples with detectable levels of lead ranged from 66 ppm to 546 ppm (average concentration = 279 ppm), except for 2 samples (sample plus duplicate) collected at 1 location (S6/S26); lead concentrations in these 2 samples were 21,800 ppm and 22,500 ppm. Lead concentrations in the 4 footpath samples were 29 ppm, 105 ppm, 543 ppm and 1,770 ppm. Exclusive of the 2 samples containing lead at 21,800 ppm and 22,500 ppm lead, only 1 sample of the remaining 21 samples contained lead at a concentration greater than 1,000 ppm (1,770 ppm).

#### Cadmium

Cadmium was detected in 11 of the 12 roadway samples at concentrations ranging from less than 1.0 ppm to 19.3 (average concentration = 3.0 ppm). Cadmium concentrations in the vacant field samples ranged from 1.1 ppm to 152 ppm (average concentration = 27.4 ppm). Cadmium was detected in 3 of the 4 footpath samples at concentrations ranging from 1.2 ppm to 51.4 ppm (average concentration = 18.9 ppm).

#### PCBs

PCBs were detected in all surface soil samples collected from the roadway, vacant field, and footpath. PCB concentrations in the roadway samples ranged from 8.0 ppm to 340 ppm (average concentration = 87.5 ppm). PCB concentrations in the vacant field samples ranged from 4.9 ppm to 100 ppm (average concentration = 42.4 ppm), except for one vacant field sample that contained PCBs at 3,000 ppm. PCB concentrations in the footpath samples ranged from 3.6 ppm to 90 ppm (average concentration = 36.5 ppm), except for one footpath sample that contained PCBs at 1,000 ppm.

### Discussion

A limited sampling event was conducted at the Cornell-Dubilier site to locate and identify potential sources of contamination. Twenty-three sample locations were selected; this limited sampling is not an adequate characterization of the extent of contamination at the 25 acre site.

Because site access is not restricted and there are residences located nearby, it is anticipated that populations potentially exposed to contamination on-site will include on-site workers (adults) and trespassers from nearby residences (adults and children). It is not anticipated that infants and/or toddlers will frequently or regularly

access the site.

#### Lead

The Centers for Disease Control and Prevention (CDC) has indicated there is sufficient evidence that adverse health effects occur at blood lead levels at least as low as 10 micrograms per deciliter (ug/dL) in children [4]. Young children and fetuses are especially sensitive to the toxic properties of lead. Factors accounting for this susceptibility include the following: 1) the immaturity of the blood-brain barrier which allows entry of lead into the immature nervous system, 2) hand-to-mouth behavior and pica behavior (ingestion of nonfood items, such as soil) which leads to consumption of lead-contaminated media, 3) enhanced gastrointestinal absorption of lead (affected by the nutritional status of the child), 4) low body weight, and 5) the ready transfer of lead across the placenta to the developing fetus [4]. These factors put children exposed to lead at a much higher risk of developing adverse health effects than adolescents and adults.

Studies indicate that ingestion and inhalation of lead-contaminated media can contribute to elevated blood lead levels [4]. Blood lead levels in young children have been reported to be raised, on average, about 5 ug/dL for every 1,000 milligrams of lead per kilogram of soil or dust, and may increase 3 to 5 times higher than the mean response depending on play habits and mouthing behavior [4]. Blood lead levels of 10 ug/dL and above have been associated with adverse health effects such as developmental and hearing impairment, and reductions in intelligence quotient (IQ) in children [4,5].

The limited analytical data indicate that elevated lead levels in surface soil are not widespread across the site. One sample location (S6/S26) had very elevated levels of lead (greater than 21,000 ppm lead); however, the extent of the elevated lead levels in the area around this sample location has not been adequately characterized.

#### Cadmium

Cadmium was detected in most of the collected samples at average concentrations ranging from 3.0 ppm to 27.4 ppm. Exposure to cadmium may occur due to ingestion of contaminated soil or inhalation of cadmium-laden dust.

Chronic exposure to low levels of cadmium via ingestion may adversely affect the kidneys and skeletal system [6]. Inhalation of high levels of cadmium in air can damage the lungs, and chronic inhalation of low levels can cause kidney disease [6].

Based on kidney effects in humans chronically exposed to cadmium, ATSDR has derived a chronic oral Minimal Risk Level (MRL) of 7.0E-04 mg/kg/day; an MRL is defined as an estimate of daily human exposure to a dose of a chemical that is likely to be without an appreciable risk of adverse noncancerous effects over a specified duration of exposure.

Using standard default values (70 kg adult ingesting 50 milligrams of soil per day), an adult ingesting soil containing 27.4 ppm cadmium (maximum average concentration) will receive a dose approximately 1 order of magnitude less than the MRL. Assuming that young children (30 kg body weight) may trespass on the site and ingest soil (200 milligrams per day), a child ingesting soil that contains 27.4 ppm cadmium will receive a dose approximately 4 times less than the MRL.

#### PCBs

Elevated levels of PCBs were detected in surface soil samples collected at the site. Average concentrations of PCBs were 87.5 ppm, 42.4 ppm, and 36.5 ppm in the roadway, vacant field, and footpath surface soil samples, respectively.

PCBs can be absorbed into the body via ingestion, inhalation, or dermal exposure following ingestion of dust or soil, inhalation of PCB-laden dust, or direct dermal contact with PCBs in soil or dust. In humans, long-term exposure to PCBs can affect the skin and liver; reproductive, endocrine, immunosuppressive, and carcinogenic effects have been observed in animal studies [7,8]. PCBs have very low potential for producing acute toxic effects [8].

Based on an immunosuppressive effect seen in monkeys chronically exposed to PCBs, ATSDR has derived a chronic oral Minimal Risk Level (MRL) for PCBs of  $2.0 \times 10^{-5}$  mg/kg/day; an MRL is defined as an estimate of daily human exposure to a dose of a chemical that is likely to be without an appreciable risk of adverse noncancerous effects over a specified duration of exposure.

Using standard default values (70 kg adult ingesting 50 milligrams of soil per day), an adult ingesting soil containing 36.5 ppm PCBs (lowest average concentration of the 3 areas sampled) will receive a dose approximately equivalent to the MRL. At a soil concentration of 3,000 ppm PCBs (maximum concentration detected in any surface soil sample), the dose would exceed the MRL by over 2 orders of magnitude.

Assuming that young children (30 kg body weight) may trespass on the site and ingest soil (200 milligrams per day), a child ingesting soil that contains 36.5 ppm PCBs will receive a dose approximately 1 order of magnitude greater than the MRL. At a soil concentration of 3,000 ppm PCBs, the dose would exceed the MRL by over 3 orders of magnitude. Additional exposure to PCBs by inhalation of PCB-laden dust and dermal absorption would potentially increase the received dose in both on-site workers and children that trespass.

#### Conclusions

Based on the limited analytical data collected at the Cornell-Dubilier Site, ATSDR concludes the following:

The limited sampling (23 sample locations for 25 acres) is not

Name: Cornell-Dubilier Electronics  
LOG #: 97-1004

adequate to completely characterize the extent of contamination at the site.

Lead concentrations that present a public health concern are not widespread across the site; lead concentrations in 1 area (sample location S6/S26) are at levels of public health concern.

The extent of lead contamination in the area of sample location S6/S26 has not been adequately defined.

Cadmium is not present in surface soil on-site at levels of public health concern.

PCBs are present at levels of public health concern in sampled areas at the site; chronic exposure to PCBs in surface soil presents a public health concern to on-site workers and trespassers.

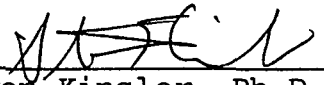
#### Recommendations

Conduct additional sampling to adequately characterize the extent of contamination at the site.

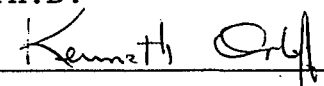
Prevent exposure to PCBs in surface soil at levels of public health concern.

Prevent off-site migration of PCBs in dust or soil.

If further clarification is required or if additional information becomes available, please do not hesitate to contact this office at 404/639-0616.

  
\_\_\_\_\_  
Steven Kinsler, Ph.D.

Date: October 30, 1996

Concurrence:   
\_\_\_\_\_  
Date: 10/30/96

#### References

1. Personal Communication, S. Jones/S. Kinsler, September 23, 1996.
2. Personal Communication Series, S. Jones/S. Kinsler, N. Magriples/S. Kinsler, October 1996.
3. ATSDR Record of Activity (AROA), Cornell-Dubilier Electronics, South Plainfield, New Jersey, Log # 96-4046, S. Kinsler, 9-17-96.

Name: Cornell-Dubilier Electronics  
LOG #: 97-1004

4. Preventing Lead Poisoning in Young Children, A Statement by The Centers for Disease Control - October 1991, U.S. Department of Health and Human Services, Public Health Service.
5. Toxicological Profile for Lead, Update, U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry, April 1993.
6. Toxicological Profile for Cadmium, U.S. Department of Health and Human Services, Agency for Toxic Substances and Disease Registry, April 1993.
7. Toxicological Profile for Polychlorinated Biphenyls, U.S. Department of Health and Human Services, Agency for Toxic Substances and Disease Registry, April 1993.
8. ATSDR Case Studies in Environmental Medicine, Polychlorinated Biphenyl Toxicity, U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry, June 1990.

CC:

PERIS

Ed Skowronski, Acting Chief, EICB

Steven Kinsler, Toxicologist, CS

Steve Jones, Region 2 ATSDR Regional Representative

Arthur Block, Region 2 ATSDR Senior Regional Representative

David Hutchins, TPO

#### **Appendix 4 - Health Consultation (May 1997)**

## **Health Consultation**

Cornell-Dubilier Electronics (20GZ)  
(aka Hamilton Industrial Park)  
South Plainfield, New Jersey  
NJD981557879

May 27, 1997

U.S. Department of Health and Human Services  
Public Health Service  
Agency for Toxic Substances and Disease Registry  
Division of Health Assessment and Consultation  
Exposure Investigation and Consultation Branch  
Atlanta, Georgia 30333

## Background and Statement of Issues:

The Region II, U.S. Environmental Protection Agency (EPA) has requested that the Agency for Toxic Substances and Disease Registry (ATSDR) comment on the public health threat posed by indoor polychlorinated biphenyls (PCB) contamination at the Cornell-Dubilier Site in South Plainfield, New Jersey.

The Cornell-Dubilier Electronics, Inc. facility operated on the 25 acre site until the early 1960's. The company manufactured electronic parts and components, and tested transformer oils. Discarded electronic components were land filled on-site and transformer oils contaminated with PCB were reportedly dumped onto site soils. The site is currently known as the Hamilton Industrial Park and is occupied by approximately 15 industrial businesses.

At the request of EPA Region II, the NJDHSS provided a health consultation for the site in March 1997 in which they performed a pathway analysis. Consequently, through negotiations with the responsible parties, interim measures were taken by EPA to reduce exposures at the site. In addition, a health consultation was conducted by ATSDR in October 1996 commenting on soil PCB levels on site [1]. ATSDR concluded that the PCBs in surface soils posed a long-term health concern for on-site workers and trespassers. The NJDHSS has also developed a fact sheet for the site describing the contamination and addressing health concerns of workers and area residents.

On March 21, 1997, the EPA Environmental Response Team (EPAERT) supervised the collection of wipe samples from the interior surfaces of several on-site buildings. In addition, lead and cadmium wipe samples were collected from interior surfaces. The samples were collected by wiping a wet 3 inch by 3 inch cotton gauze pad over an area of 100 square centimeters.

ATSDR was provided results from 27 samples collected from 12 buildings. Two unoccupied buildings were not sampled. The wipe sampling results indicated that elevated levels of PCBs (Aroclors 1254, 1260) were present on various interior surfaces (see attached tables). Total PCBs ranged from non-detect to 680 micrograms per 100 square centimeters ( $\mu\text{g}/100\text{cm}^2$ ). Approximately one-half of the wipe samples exceeded  $10 \mu\text{g}/\text{cm}^2$  (combined Aroclors 1254, 1260).

Cadmium concentrations ranged from non-detect to  $34 \mu\text{g}/100\text{cm}^2$ . Lead concentrations ranged from non-detect to  $780 \mu\text{g}/100 \text{ cm}^2$  (see attachment).

## Discussion:

### PCBs:

Although PCBs are no longer made in the United States, many transformers and capacitors still contain PCBs. Spills and improper disposal and handling of PCBs, such as the case at this site, have resulted in environmental contamination. Since PCBs persist in the environment for years, and also have the ability to collect in human fatty tissue, the PCBs represent a long-term health threat to humans [2].

In humans, long-term exposure to PCBs can affect the skin and liver; reproductive, endocrine, immunosuppressive, and carcinogenic effects have been observed in animal studies [2,3]. Short-term exposure of humans to elevated levels of PCBs can result in chloracne. Exposure can occur through the inhalation and ingestion of PCB-contaminated dust, or through the absorption of PCBs through the skin. Workers can also carry contamination home on shoes and clothing exposing other members of the family.

PCB concentrations at this site have been detected as high as  $680 \mu\text{g}/100\text{cm}^2$  on indoor surfaces. PCBs at similar concentrations at other work places have been shown to raise serum PCB levels. For example, Christiani et. al. measured serum PCB levels in employees working in areas with surface concentrations of PCBs averaging  $161 \mu\text{g}/100\text{cm}^2$  [4]. Serum PCB levels in the workers ranged from 3.1 to 65 parts per billion (ppb) with a mean concentration of 15.3 ppb. The average background blood serum concentration among populations in the United States was 5 to 7.7 ppb [2]. Medical evaluation of the workers in the Christiani study showed neither chloracne or other symptomatic manifestation of toxicity nor a relationship between liver enzyme levels and serum PCB levels. Numerous studies have attempted to correlate serum PCB levels with liver associated enzymes in PCB-exposed workers, however, no conclusive association has been found [2].

EPA has developed a PCB spill cleanup policy under the Toxic Substances Control Act (TSCA). The TSCA policy is considered conservative and protective of public health. The TSCA spill policy calls for PCBs to be cleaned to  $10 \mu\text{g}/100\text{cm}^2$  for high contact surfaces. High contact in industrial settings are defined as surfaces which are repeatedly touched, often for long periods of time. Manned machinery and control panels are examples of high-contact industrial surfaces. Based on assessments of risk posed by PCBs on indoor hard surfaces, the dermal exposure route would be expected to be the route of greatest concern [5]. PCB levels on indoor surfaces of  $10 \mu\text{g}/100\text{cm}^2$  are associated with an oncogenic risk of  $1 \times 10^{-5}$ .

### Lead and Cadmium:

The wipe samples that were collected indicated the presence of cadmium and lead on interior surfaces. However, it is difficult to assess the health risk posed by this contamination because of the uncertainty in estimating the exposure dose of a metal from a contaminated surface. Air sampling data would provide a better estimate of potential human exposure to cadmium and lead, since inhalation of contaminated dusts is the most likely route of exposure.

### Conclusions:

1. Based on the available information, the site poses a potential health threat to workers due to the presence of indoor levels of PCB contamination. Although short-term effects are not likely to occur given the levels of contamination, the site does pose a potential long-term health threat to workers. Family members may also be exposed to PCBs carried home on the shoes or clothing of workers.
2. Wipe samples for lead and cadmium are useful as a qualitative indicator of contamination, but cannot be used to assess human exposures. Air sampling data would be more useful in quantitatively estimating potential human exposures.

### Recommendations:

1. Have surfaces remediated to comply with TSCA PCB Spill Policy.
2. Consider conducting indoor-air sampling to determine the potential health threat posed by cadmium and lead contamination. If the building is unoccupied, conduct aggressive sampling to simulate activity.
3. If any workers are experiencing health effects, have them evaluated by a health care provider for PCB exposure.
4. This site will be considered for an exposure investigation by the ATSDR Exposure Investigation Section.

Timothy Walker, M.S.  
Environmental Health Scientist

Concurred: Kenneth G. Orloff, Ph.D., DABT  
Senior Toxicologist

References:

1. ATSDR Health Consultation for the Cornell-Dubilier Site, October 7, 1996.
2. Toxicological Profile for Polychlorinated Biphenyls, U.S. Department of Health and Human Services, Agency for Toxic Substances and Disease Registry, April 1993.
3. ATSDR Case Studies in Environmental Medicine, Polychlorinated Biphenyl Toxicity, U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry, June 1990.
4. Persistently Elevated Polychlorinated Biphenyl Levels from Residual Contamination of Workplace Surfaces. David C. Christiani et al., American Journal of Industrial Medicine, 10:143-151, 1986.
5. Polychlorinated Biphenyls Spill Cleanup Policy, 40 CFR Part 761, U.S. EPA. April 2, 1987.

cc:

EICB File (E32)

David Hutchins, TPO (E32)

PERIS (E32)

Mr. Jim Pasqualo

Program Manager

Division of Occupational and  
Environmental Health

New Jersey Department of Health

210 South Broad Street

Trenton, New Jersey 08625-0360

Send to:

Arthur Block

Sr. ATSDR Regional Representative

EPA Region II

290 Broadway, North

18th Floor

New York, NY 10007

## **Appendix 5 - Health Consultation (July 1997)**

## ATSDR Record of Activity

UID #: \_\_\_\_\_

Date: 3/11/97

Time: \_\_\_\_\_ am \_\_\_\_\_ pm \_\_\_\_\_

Site Name: Comell-Dubilier Electronics (AKA Hamilton Industrial Park)

City: South Plainfield Cnty: Middlesex State: NJ

CERCLIS #: NJ981557879

Cost Recovery #: 20GZ

Region: 2

Site Status (1) ☐ NPL ☒ Non-NPL ☐ RCRA ☐ Non-Site specific ☐ Federal  
(2) ☐ Emergency Response ☐ Remedial ☐ Other

### Activities

<input type="checkbox"/> Incoming Call	<input type="checkbox"/> Public Meeting	<input checked="" type="checkbox"/> Health Consult	<input checked="" type="checkbox"/> Site Visit
<input type="checkbox"/> Outgoing Call	<input checked="" type="checkbox"/> Other Meeting	<input type="checkbox"/> Health Referral	<input checked="" type="checkbox"/> Info Provided
<input type="checkbox"/> Conference Call	<input checked="" type="checkbox"/> Data Review	<input type="checkbox"/> Written Response	<input type="checkbox"/> Training
<input checked="" type="checkbox"/> Incoming Mail	<input type="checkbox"/> Other		

Requestor and Affiliation: Michael Bonk, Health Officer, South Plainfield Health Department

Phone: 908-226-7634

Address: 2480 Plainfield Avenue

City: South Plainfield

State: NJ Zip Code: 07080

### Contacts and Affiliation

(1) Arthur Block (Region 2) (2) Eric Wilson (Region 2) ( ) \_\_\_\_\_ ( ) \_\_\_\_\_

1=ATSDR 2=EPA 3=USCG 4=DOD 5=DOE 6=NOAA 7=Natl Respns Ctr 8=other Fed  
9=State Hlth 10=State Env 11=other state 12=County Hlth 13=other county 14=City Hlth 15=other city  
16=Hospital 17=Poison Ctr 18=Fire Dept 19=Law Enf 20=Priv Citzn 21=Ctzh Group 22=Elected Off  
23=Priv Co. 24=News Media 25=Internatl 26=Other \_\_\_\_\_ 27=Unknown

### Program Areas

<input type="checkbox"/> Health Assessment	<input type="checkbox"/> Health Studies	<input checked="" type="checkbox"/> Tox Info-profile	<input type="checkbox"/> Worker Hlth
<input type="checkbox"/> Petition Assessment	<input type="checkbox"/> Health Surveillnc	<input checked="" type="checkbox"/> Tox Info-Nonprofile	<input type="checkbox"/> Admin
<input type="checkbox"/> Emergency Response	<input type="checkbox"/> Disease Registry	<input type="checkbox"/> Subst-Spec Resch	<input type="checkbox"/> Other
<input checked="" type="checkbox"/> Health Consultation	<input type="checkbox"/> Exposr Registry	<input checked="" type="checkbox"/> Health Education	

### Narrative Summary:

At the request of the Health Officer of the Borough of South Plainfield, a meeting was held on February 5, 1997 which was attended by representatives of the South Plainfield Health Department (SPHD), the New Jersey Department of Health and Senior Services (NJDHSS), the Agency for Toxic Substances and Disease Registry (ATSDR) Region II, and the U. S. Environmental Protection Agency (EPA) Region II.

## Historical Perspective

During the period 1936-1962, Comell-Dubiher Electronics (CDE) manufactured electrical components, including capacitors, on this 25 acre property which is a potential NPL site. During some portion of that period it has been reported the CDE also tested transformer oils on the property. As a result, it has been alleged that CDE disposed of PCB-containing oil and other hazardous materials directly on the soil on site property. The CDE property, now known as Hamilton Industrial Park, is an actively used industrial property which includes numerous brick buildings and several Quonset huts. Approximately 15 tenant commercial businesses which employ some two hundred individuals currently occupy the property.

## Summary of Previous Environmental Characterization

Environmental sampling of the property has been conducted by EPA on several occasions. In June, 1994 surface water (four locations), surface soil (six locations), and sediment (four locations) samples were taken on the property. In April, 1996 four air samples were taken along the perimeter of the fenced area in which a truck driving school operated. In June 1996 additional sampling (forty-eight soil samples and one sediment sample) was conducted in conjunction with pre-remedial site assessment. In July, 1996 eighteen additional soil samples were obtained, including six surface soil samples from within the fenced area, and twelve samples from six test pits dug on the property. These data have been summarized in the EPA Removal Site Evaluation dated January 9, 1997.

## Public Health Implications of Site Contaminants

The surface soil sampling events have indicated the presence of polychlorinated biphenyls (PCBs), lead (Pb), and cadmium (Cd) at levels of public health concern at various locations on site property. Based on the results of the June, 1996 sampling event, which showed high PCB levels in the surface soil of the fenced (unpaved) 1.5 acre area, the permit for operating a truck driving school within this area was revoked by the Borough of South Plainfield in October, 1996. This action was taken in order to interrupt the potential exposure pathway which could result from inhalation of entrained fugitive dust, as concluded in the ATSDR Record of Activity (AROA) Data Review of September 17, 1996.

However, an additional potential public health risk remains at the CDE site due to generation (and possible inhalation) of fugitive dusts by vehicular traffic on the dirt/gravel road which traverses the property. Fugitive dust might be inhaled by workers on the property, or carried off the property by ambient wind. In addition, inhalation/ingestion could also result from dirt/dust carried inside buildings on site property (or possibly carried off-site) on workers' shoes.

## Recommendation for Interim Action by EPA to Protect Public Health

It has been agreed by NJDHSS, ATSDR, and EPA that a potential pathway exists for human exposure via inhalation of fugitive dust which contains PCBs. Consequently, it is recommended that, as soon as practicable, EPA, with the assistance of NJDHSS and ATSDR, determine and take all necessary and appropriate interim actions which would be required to interrupt the potential exposure pathway caused by dust generation on the dirt/gravel road which traverses the site property. Such action will serve to terminate any possible previous exposure to entrained dust by workers on the site and nearby residents, and would facilitate further permanent remedial actions.

**Assistance from NJDHSS/ATSDR**

As requested by Mr. Bonk, the Health Officer for South Plainfield (see attached letter), NJDHSS/ATSDR will assist the South Plainfield Health Department by providing public health education materials and professional expertise to explain the potential implications of human exposure to PCBs. Such assistance would be primarily in the form of "fact sheets" on the potential health effects which might result from exposure to these contaminants; however, in addition, professional expertise would be provided as needed at public availability sessions which might be scheduled by the SPHD. (The attached "fact sheet" on PCBs was provided by NJDHSS for use by ATSDR, the South Plainfield Health Department, and EPA Region 2 for distribution at the public meetings which were held on February 18 and 20, 1997.)

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Encl as

cc: Michael Bonk, Health Officer, South Plainfield Health Department  
Eric Wilson, On Scene Coordinator, EPA Region II Remedial Action Branch

**Appendix 6 - Health Consultation (July 1997)**

**(will be added before PHA is finalized)**

## **Appendix 7 - Health Consultation (September 1997)**

# **Health Consultation**

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**CORNELL DUBILIER ELECTRONICS INCORPORATED**

**SOUTH PLAINFIELD, MIDDLESEX COUNTY, NEW JERSEY**

**CERCLIS NO. NJD981557879**

**SEPTEMBER 9, 1997**

**U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES**

**Public Health Service**

**Agency for Toxic Substances and Disease Registry**

**Division of Health Assessment and Consultation**

**Atlanta, Georgia**

## HEALTH CONSULTATION

CORNELL DUBILIER ELECTRONICS INCORPORATED

SOUTH PLAINFIELD, MIDDLESEX COUNTY, NEW JERSEY

CERCLIS NO. NJD981557879

Prepared by:

Exposure Investigation and Consultation Branch  
Division of Health Assessment and Consultation  
Agency for Toxic Substances and Disease Registry

## Background and Statement of Issues

The Region II U.S. Environmental Protection Agency (EPA) has requested that the Agency for Toxic Substances and Disease Registry (ATSDR) review analytical data of fish samples collected from surface water near the Cornell-Dubilier Electronics (CDE) site and determine if polychlorinated biphenyls (PCBs) are present in fish at levels of public health concern.

The CDE site is located at 333 Hamilton Boulevard in South Plainfield, Middlesex County, New Jersey [1]. The 25 acre site is located in an industrial/commercial/residential area and is bordered by commercial businesses and residences on the south, west, and north, and on the southeast, east, and northeast by an unnamed tributary to Bound Brook [1].

During the 1950s, Cornell-Dubilier Electronics, Inc. manufactured electronic parts and components, and tested transformer oils. Discarded electronic components were landfilled onsite and transformer oils contaminated with PCBs were reportedly dumped directly onto site soils [1]. The company vacated the site in the early 1960s.

The site is currently known as the Hamilton Industrial Park and is occupied by an estimated 15 commercial businesses. Numerous companies have operated at the site as tenants over the years [1].

An unnamed creek that borders the site to the southeast, east, and northeast flows into Bound Brook. The confluence of the unnamed creek and Bound Brook is approximately 800 meters downstream of the site. Bound Brook then flows west for approximately 3,000 meters and enters New Market Pond. Available information indicates that fish are being caught and eaten from Bound Brook and New Market Pond [2].

The EPA has conducted sampling events at the site. In mid-1996, several surface soil samples (0 - 3 inches and 0 - 6 inches) were collected from a 1.5 acre fenced area at the site and analyzed for PCBs; PCBs were detected at a maximum concentration of 51,000 parts-per-million [3].

In mid-1996, the EPA collected surface soil samples (0 - 3 inches) from 23 locations at the site [1]. Samples were analyzed for PCBs; PCBs were detected at concentrations ranging from 3.6 to 3,000 ppm [1].

A fish sampling event was conducted in surface waters adjacent to and near the CDE site. Fish were collected from the following locations:

Three areas of Bound Brook located downstream from the CDE site

Two areas of New Market Pond

The unnamed creek at a location immediately adjacent to the CDE site

The unnamed creek at a reference location 1,000 meters upgradient of the CDE site [4].

Fish filets were analyzed for PCBs. PCBs were detected at maximum concentrations indicated in Table 1 [4].

Table I. Maximum Concentrations of PCBs Detected in Fish Filets

<u>Location</u>	<u>Concentration (ppm).</u>
Bound Brook	12.2
New Market Pond	36.0
Adjacent, CDE	9.8
Reference Location	7.8

Note: Fish ranged in total length from 4.1 to 25.6 inches (average = 10.9 inches). Fish ranged in total weight from 0.8 to 35.4 ounces (average = 9.7 ounces)

#### Discussion

PCBs are persistent in the environment and break down slowly. In water, PCBs partition significantly from water to aquatic organisms, such as fish [5]. The bioconcentration factors (BCF) of various PCBs in aquatic animals vary from 26,000 to 660,000; BCF is defined as the ratio of the concentration of a contaminant in aquatic organisms to the concentration of the contaminant in the surrounding water. Evidence also indicates that PCBs biomagnify within the food chain [5].

In humans, long-term exposure to PCBs can affect the skin and liver; reproductive, endocrine, immunosuppressive, and carcinogenic effects have been observed in animal studies [5,6] PCBs have very low potential for producing acute toxic effects [6].

Consumption of fish that contain elevated levels of PCBs can result in exposures at levels of public health concern. The Food

and Drug Administration (FDA) has set tolerances for PCBs in the edible portions of fish at 2 ppm [7]. Tolerances are established at levels that are sufficient for the protection of public health [8]. The tolerance level of 2 ppm PCBs was exceeded in at least one sample of each of the species collected [4].

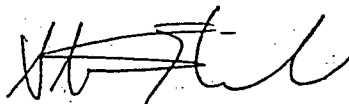
#### Conclusions

Based on the available data, ATSDR concludes that PCBs in fish collected in surface water near the Cornell-Dubilier Electronics Site in South Plainfield, New Jersey exceed FDA tolerance levels for PCBs in fish and are at levels of public health concern.

#### Recommendations

Fish that contain greater than 2 ppm PCBs in the edible portion of the fish should not be eaten.

If further clarification is required or if additional information becomes available, please do not hesitate to contact this office at 404/639-0616.



Steven Kinsler, Ph.D.  
Senior Toxicologist

## References

1. ATSDR Record of Activity, Cornell-Dubilier Electronics, Log # 97-1004, S. Kinsler, October 30, 1996.
2. Personal Communication, S. Kinsler, ATSDR; E. Wilson, EPA; July 31, 1997.
3. ATSDR Record of Activity, Cornell-Dubilier Electronics, Log # 96-4046, S. Kinsler, September 19, 1996.
4. Bound Brook Sampling and Edible Fish Tissue Data Report, Cornell-Dubilier Electronics Site, South Plainfield, New Jersey, Prepared By: Environmental Response Team Center, Office of Emergency and Remedial Response, U.S. Environmental Protection Agency, July 1997.
5. Toxicological Profile for Polychlorinated Biphenyls, U.S. Department of Health and Human Services, Agency for Toxic Substances and Disease Registry, April 1993.
6. ATSDR Case Studies in Environmental Medicine, Polychlorinated Biphenyl Toxicity, U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry, June 1990.
7. Code of Federal Regulations, Title 21, Volume 2, Chapter 1, Part 109, Section 109.30--Tolerances for polychlorinated biphenyls (PCBs), April 1, 1996.
8. Code of Federal Regulations, Title 21, Volume 2, Chapter 1, Part 109, Section 109.4--Establishment of tolerances, regulatory limits, and action levels. April 1, 1996.

**Appendix 8 - Health Consultation (May 1998)**

# Health Consultation

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CORNELL DUBILIER ELECTRONICS INCORPORATED  
SOUTH PLAINFIELD, MIDDLESEX COUNTY, NEW JERSEY

CERCLIS NO. NJD981557879

MAY 26, 1998

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES  
Public Health Service  
Agency for Toxic Substances and Disease Registry  
Division of Health Assessment and Consultation  
Atlanta, Georgia 30333

HEALTH CONSULTATION

CORNELL DUBILIER ELECTRONICS INCORPORATED  
SOUTH PLAINFIELD, MIDDLESEX COUNTY, NEW JERSEY

CERCLIS NO. NJD981557879

Prepared by:

Exposure Investigation and Consultation Branch  
Division of Health Assessment and Consultation  
Agency for Toxic Substances and Disease Registry

## Background and Statement of Issues

The Region II U.S. Environmental Protection Agency (EPA) has requested that the Agency for Toxic Substances and Disease Registry (ATSDR) evaluate analytical data from residential properties located across the street from the Cornell-Dubilier Electronic Inc. site in South Plainfield, New Jersey, and determine if polychlorinated biphenyls (PCBs) in indoor dust and surface soils are at levels of public health concern [1]. Exposure Investigation and Consultation Branch (EICB) has completed several verbal health consultations regarding on-site PCB contamination and made public health recommendations that have included sampling of residential homes near the site [2,3].

The Cornell-Dubilier Electronics Site is located at 333 Hamilton Boulevard in South Plainfield, Middlesex County, New Jersey. The 25 acre site is bordered by commercial businesses and residences on the south, west and north, and on the southeast, east, and northeast by an unnamed tributary to Bound Brook [2]. It is estimated that 540 persons reside within 0.25 miles of the site; the nearest residence is approximately 200 feet from the site [2].

During the 1950s, Cornell-Dubilier Electronics, Inc. manufactured electronic parts and components, and tested transformer oils. Discarded electronic components were landfilled onsite and transformer oils contaminated with PCBs were reportedly dumped directly onto site soils. The company vacated the site in the early 1960s [2].

The site is currently known as the Hamilton Industrial Park and is occupied by an estimated 15 commercial businesses. Numerous companies have operated at the site as tenants over the years [2]. A paved driveway is used to enter the park; the pavement ends within 100 yards of entering the park. It has been observed that vehicles entering the industrial park during dry conditions create airborne dust [2]. The driveway leads into what was formally a dirt, gravel, and stone roadway that nearly encircles the business structures at the site. The roadway separates the structures from a heavily vegetated vacant field, and was paved by EPA in September 1997 as part of the site stabilization process to mitigate migration of contaminated dust.

On March 24, 1998, ATSDR and EPA Region II held a conference call to discuss indoor dust and surface soil data collected from 16 residential properties and analyzed for PCBs.

The residential properties sampled by EPA were selected using information obtained from air modeling. The indoor dust and surface soil sampling was conducted to evaluate health impacts to area residents from PCB contamination.

In October 1997, EPA Region II collected surface soil samples from 16 residential properties [4]. The soils were analyzed for PCBs. Approximately 20 surface soil samples were collected from each residential property. PCB levels in surface soils ranged from none detected to 22 parts per million (ppm).

In November 1997, EPA Region II collected indoor dust samples from 12 residential properties [5]. The indoor dust samples were analyzed for PCBs. Approximately two to four indoor dust samples were collected from each residential property. PCB levels in indoor dust ranged from none detected to 205 ppm (or 117 micrograms (ug) total PCBs in sample mass).

## Discussion

Because the properties sampled were residential, it is anticipated that populations potentially exposed to contamination will include children and adults.

PCBs can be absorbed into the body via ingestion, inhalation, or dermal exposure following ingestion of dust or soil, inhalation of PCB-laden dust, or direct dermal contact with PCBs in soil or dust. In humans, long-term exposure to PCBs can affect the skin and liver; reproductive, endocrine, immunosuppressive, and carcinogenic effects have been observed in animal studies [6]. PCBs have very low potential for producing acute toxic effects [6].

An immunosuppressant effect was observed in a study of monkeys chronically exposed to 0.005 mg/kg/day of PCBs. On the basis of this study of monkeys, ATSDR has derived a chronic oral Minimal Risk Level (MRL) for PCBs of  $2.0 \times 10^{-5}$  mg/kg/day. An MRL is defined as an estimate of daily human exposure to a dose of a chemical that is likely to be without an appreciable risk of adverse noncancerous effects over a specified duration of exposure [6]. Screening level exposure-dose calculations indicate that children in some houses may exceed the MRL.

Since screening analysis identified potential for health concern, soil and dust PCB concentrations were evaluated using averaged daily doses estimated for both child and adult residential exposure scenarios and both cancer and non-cancer dose response relationships for PCBs. The exposure dose equation and parameter assumptions used for soil assessment followed that found in EPA RAGS. Exposure equations used for indoor dust assessment were based on ongoing methods development by a combined ATSDR/EPA/CDC workgroup on residential dust pathway analysis. Evaluations of health concerns were made on a house-by-house basis using estimated excess individual cancer risk, a margin of exposure analysis relative to the identified LOAEL for immunosuppression, and qualitative consideration of uncertainty based on site specific data.

## Conclusions

Based on the indoor dust and surface soil analytical data for the residential properties located across the street from the Comeil-Dublier site, the one point and time sampling event for both indoor dust and surface soils, the unknown location of an elevated level of PCBs on a specific residential property (e.g., the one 22 ppm elevated PCB level may be located next to a child's play area or near the entryway into the home), and the uncertainty of the future indoor dust levels (how the indoor dust levels would be impacted by surface soil contamination is uncertain), ATSDR concludes the following:

1. Elevated levels of PCBs were detected in indoor dust and the surface soils at residential properties that may pose a health concern or potential health concern to the residents. The health evaluations for the residential properties are presented in the following table:

**Table 1: Health Categories for Residential Properties:**

Residential Property Designations	Health Categories	Follow up activities needed for residents with elevated levels of PCBs in indoor dust and/or surface soils
1. E	Health concern (a)	reduce/stop potential exposure to indoor dust and surface soils contaminated with PCBs  health education on ways to reduce/stop potential exposure to indoor dust and/or surface soils
2. D	Health concern (a)	reduce/stop potential exposure to indoor dust and surface soils contaminated with PCBs  health education on ways to reduce/stop potential exposure to indoor dust and/or surface soils
3. C	Health concern (a)	reduce/stop potential exposure to indoor dust and surface soils contaminated with PCBs  health education on ways to reduce/stop potential exposure to indoor dust and/or surface soils
4. G	*Potential health concern (b)	reduce/stop potential exposure to indoor dust and surface soils contaminated with PCBs  health education on ways to reduce/stop potential exposure to indoor dust and/or surface soils  resample indoor dust to ensure that future indoor dust levels are not elevated (surface soil contamination may be tracked into homes)
5. O	Potential health concern (b)	reduce/stop potential exposure to indoor dust and surface soils contaminated with PCBs  health education on ways to reduce/stop potential exposure to indoor dust and/or surface soils  resample indoor dust to ensure that future indoor dust levels are not elevated (surface soil contamination may be tracked into homes)

6. J	Potential health concern (b)	<p>reduce/stop potential exposure to indoor dust and surface soils contaminated with PCBs</p> <p>health education on ways to reduce/stop potential exposure to indoor dust and/or surface soils</p> <p>resample indoor dust to ensure that future indoor dust levels are not elevated (surface soil contamination may be tracked into homes)</p>
7. B	Potential health concern (b)	<p>reduce/stop potential exposure to indoor dust and surface soils contaminated with PCBs</p> <p>health education on ways to reduce/stop potential exposure to indoor dust and/or surface soils</p> <p>resample indoor dust to ensure that future indoor dust levels are not elevated (surface soil contamination may be tracked into homes)</p>
8. A	Potential health concern (b)	<p>health education on ways to reduce/stop potential exposure to indoor dust and/or surface soils</p> <p>resample indoor dust to ensure that future indoor dust levels are not elevated</p> <p>surface soils at this property did not represent a health concern; however, PCBs were detected in the indoor dust.</p>
9. I	Potential health concern (b)	<p>reduce/stop potential exposure to indoor dust and surface soils contaminated with PCBs</p> <p>health education on ways to reduce/stop potential exposure to indoor dust and/or surface soils</p> <p>resample indoor dust to ensure that future indoor dust levels are not elevated (surface soil contamination may be tracked into homes)</p>
10. M	Potential health concern (d)	<p>reduce/stop potential exposure to surface soils contaminated with PCBs</p> <p>health education on ways to reduce/stop potential exposure to indoor dust and/or surface soils</p> <p>indoor dust not a health concern; however, surface soil contamination may contribute to future indoor dust contamination</p>
11. F	Potential health concern (d)	<p>reduce/stop potential exposure to surface soils contaminated with PCBs</p> <p>health education on ways to reduce/stop potential exposure to indoor dust and/or surface soils</p> <p>indoor dust not a health concern; however, surface soil contamination may contribute to future indoor dust contamination</p>
12. L	No health concern (e)	no action at this time

13. H.	Potential health concern (c)	sample indoor dust  health education on ways to reduce/stop potential exposure to indoor dust and/or surface soils
14. K.	Potential health concern (c)	sample indoor dust  health education on ways to reduce/stop potential exposure to indoor dust and/or surface soils
15. N	Potential health concern (c)	sample indoor dust  health education on ways to reduce/stop potential exposure to indoor dust and/or surface soils
16. P	Potential health concern (c)	sample indoor dust  health education on ways to reduce/stop potential exposure to indoor dust and/or surface soils
(a) <u>Health concern</u> - take action to reduce/stop exposures to PCBs * <u>Potential health concern</u> - data needed, prudent to take action at this time to reduce exposures: (b) resample indoor dust to ensure that future indoor dust levels are not elevated (surface soil) contamination may be tracked into homes) (c) indoor dust sampling should be conducted to better assess the health concern at these residential properties (d) surface soils are elevated and may pose a future health concern for indoor dust contamination (e) <u>No health concern</u> - no action needed at this time		

- The nature and extent of off-site migration of PCB contaminated dust via wind has not been determined.
- The nature and extent of surface soil PCB contamination in this residential community has not been determined.

#### Recommendations

- Prevent potential exposure to PCBs in surface soil at levels of public health concern. ATSDR believes that an interim measure or permanent solution to the contaminated residential yards and/or indoor dust should be put in place within six months.
- As additional data becomes available on the extent and degree of off-site contamination, provide health education to residents on ways to reduce their potential exposure to polychlorinated biphenyls (PCBs) present in indoor dust and surface soils. ATSDR will assist in the health education at this site through the Division of Health Assessment and Consultation's Community Involvement Branch.

3. Different cleaning methods should be used in the homes where elevated levels of PCBs were detected in indoor dust by wet/damp dusting and mopping on floors and hard surfaces with a cleaning solution such as Lestoil or Mr. Clean. These products are mineral-oil-based cleaners that help to clean up the PCBs. Carpets should also be shampooed with these products. Prior to cleaning of the home interior surfaces by EPA, the use of a regular vacuum cleaner to remove dust is NOT recommended unless a HEPA (high efficiency particulate adsorption) filter is placed on the vacuum cleaner exhaust.
4. As needed, additional dust suppression techniques should be used at the site to prevent off-site migration of contaminated dust.
5. Conduct indoor dust sampling at residential properties where only surface soil sampling was conducted.
6. Determine if other residences in the area are contaminated (include soil samples from properties located upwind of the facility).

If further clarification is required or when additional information becomes available, please contact this office at 404/639-0616.

Tammie McRae Date: 5-17-98  
Tammie McRae, M.S.

Concurrence: [Signature] Date: 5/20/98

## References

1. VonGunten, Brian. ATSDR Record of Activity Region 2. Cornell-Dublier Electronics Inc. Request from EPA Region II for a health consultation for the Cornell-Dublier Electronics site. March 11, 1998.
2. Kinsler, Steven. ATSDR/Exposure Investigation and Consultation Branch Record of Activity, Cornell-Dubiller Electronics, South Plainfield, New Jersey. Log No. 97-1004. October 7, 1997.
3. Walker, Timothy. ATSDR/ Health Consultation, Cornell-Dubiller Electronics (aka Hamilton Industrial Park), South Plainfield, New Jersey. May 27, 1997.
4. Cornell-Dubiller Electronics Sampling Trip Report (Surface Soil Sampling). DCN#: START-02-F-01454. TDD#: 02-97-02-0015. PCS#: 2076. Sampling Date: October 27,28,29 and 30, 1997.
5. Final Report, Vacuum Dust Sampling, Cornell Dubiller Electronics, South Plainfield, New Jersey. U.S. EPA Work Assignment No.: 2-262. Weston Work Order No.: 03347-142-001-2262-01. U.S. EPA Contract No.: 68-C4-0022. February 1998.
6. Toxicological Profile for Polychlorinated Biphenyls (PCBs) Update. U.S. Department of Health and Human Services. Agency for Toxic Substances and Disease Registry. September 1997.
7. PCBs: Cancer Dose-Response Assessment and Application to Environmental Mixtures. National Center for Environmental Assessment, Office of Research and Development, U.S. Environmental Protection Agency. EPA/600/P-96/001F. September 1996.

**Appendix 9 - ATSDR Fish Consumption Advisory**

**C**ertain fish in the Bound Brook, New Market Pond, and the streams that feed into them may be unsafe to eat. These include:

- *largemouth bass*
- *pumpkin seed*
- *carp*
- *white sucker*

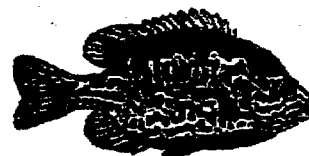
**These fish are unsafe and should not be eaten.**

**F**ish in these streams and ponds are contaminated with PCBs. Consumption of these fish may be harmful to your health. PCBs are classified as probable cancer causing substances in humans.

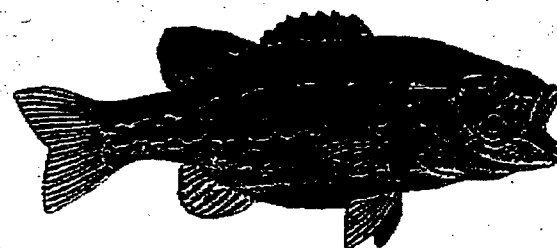
The amount of PCBs in fish from these waters is higher than the amount allowed by the U.S Food and Drug Administration. No one should eat these fish. You are at highest risk from eating fish contaminated with PCBs if you are:

- *pregnant*
- *a nursing mother*
- *a woman of child-bearing age*
- *a child under the age of 15 years.*

For information on the health effects of PCBs call:  
ATSDR Regional Representatives, Arthur Block or Brian von  
Gnnten at (908) 906-6931

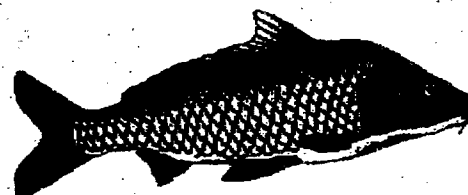


## ATSDR Fish Consumption Advisory



**Bound Brook**

**New Market Pond**



**Middlesex County**

**August 1997**